BIOLOGICAL EVALUATION FOR
Terrestrial Wildlife in the

Southern HDs Landscape Restoration Project

San Juan National Forest, Columbine Ranger District
La Plata County, Archuleta County, Colorado

Prepared by Albert Fisher, Wildlife Biologist, Columbine Ranger District, 6/14/2021

Introduction

Analyzing and disclosing the effects of this proposal on federally listed species is required to meet the objectives of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.) as amended; the National Forest Management Act (NFMA) of 1976 including Forest Service Manual 2670 direction for Threatened, Endangered and Sensitive Species management.

U.S. Forest Service policy also designates Forest Service Sensitive Species in the Rocky Mountain Region to ensure these receive full consideration throughout the National Environmental Policy Act (NEPA) process (USDA Forest Service 2011). Eight criteria were considered and evaluated to determine whether species merited Sensitive status in the Region (R2 Supplement 2670-2018-1). These criteria included 1) geographic distribution within the Region, 2) geographic distribution outside the Region, 3) capability of the species to disperse, 4) abundance of the species in the Region, 5) population trend in the Region, 6) habitat trend in the Region, 7) vulnerability of habitats in the Region, and 8) life history and demographic characteristics of the species. Although information may not be complete for all eight criteria for all species, the available information was reviewed for compelling reasons why population viability on National Forest System Lands may be of concern. This Biological Evaluation (BE) was prepared using the best available science.

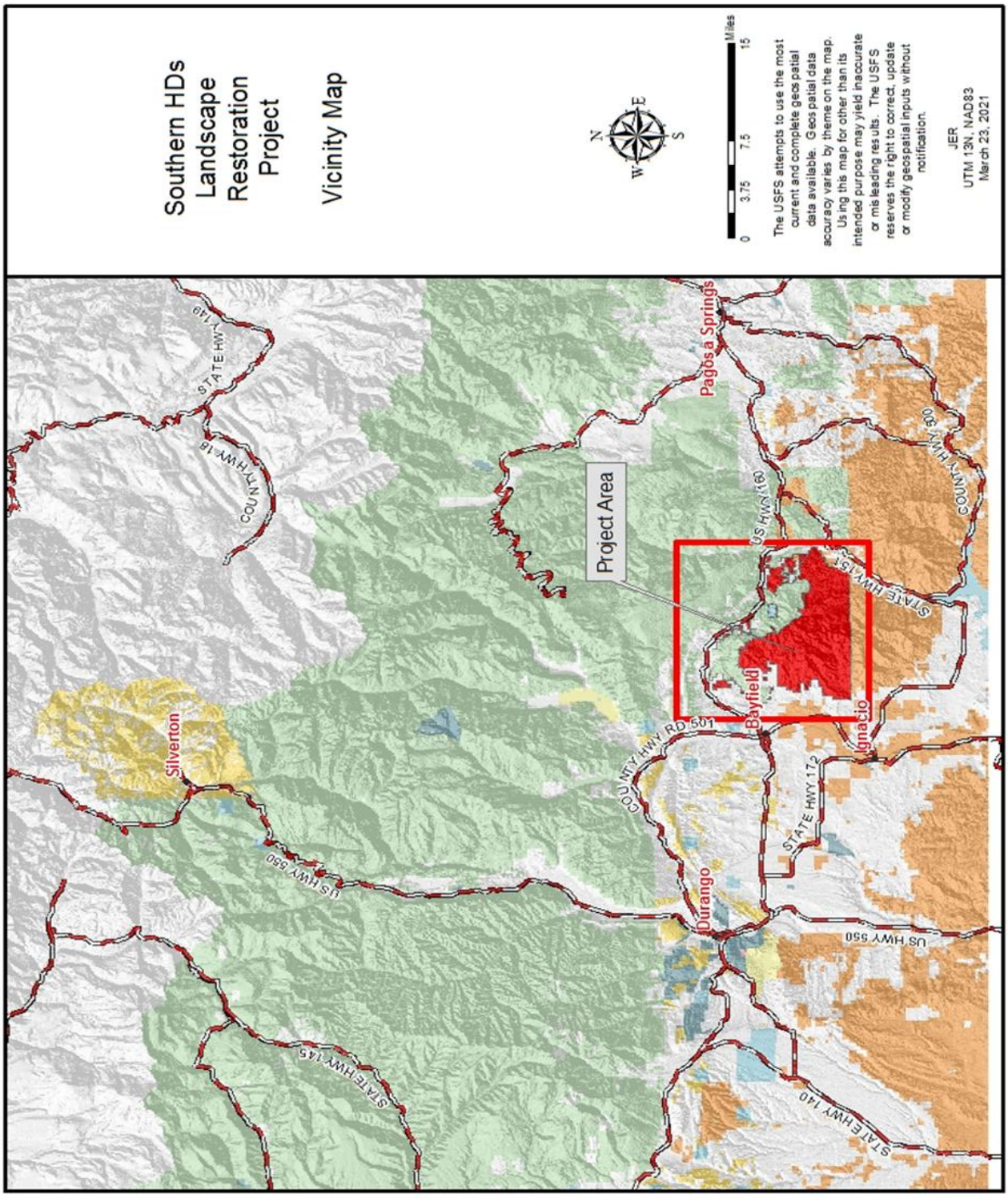
Application of the eight criteria to hundreds of animal and plant species resulted in the designation by the Regional Forester of a list of Sensitive Species in the U.S. Forest Service Rocky Mountain Region, effective December 2018. The San Juan National Forest (SJNF) then reviewed the Regional Sensitive Species List and identified species that occur, are suspected of occurring, or have habitat present on the Forest.

Location

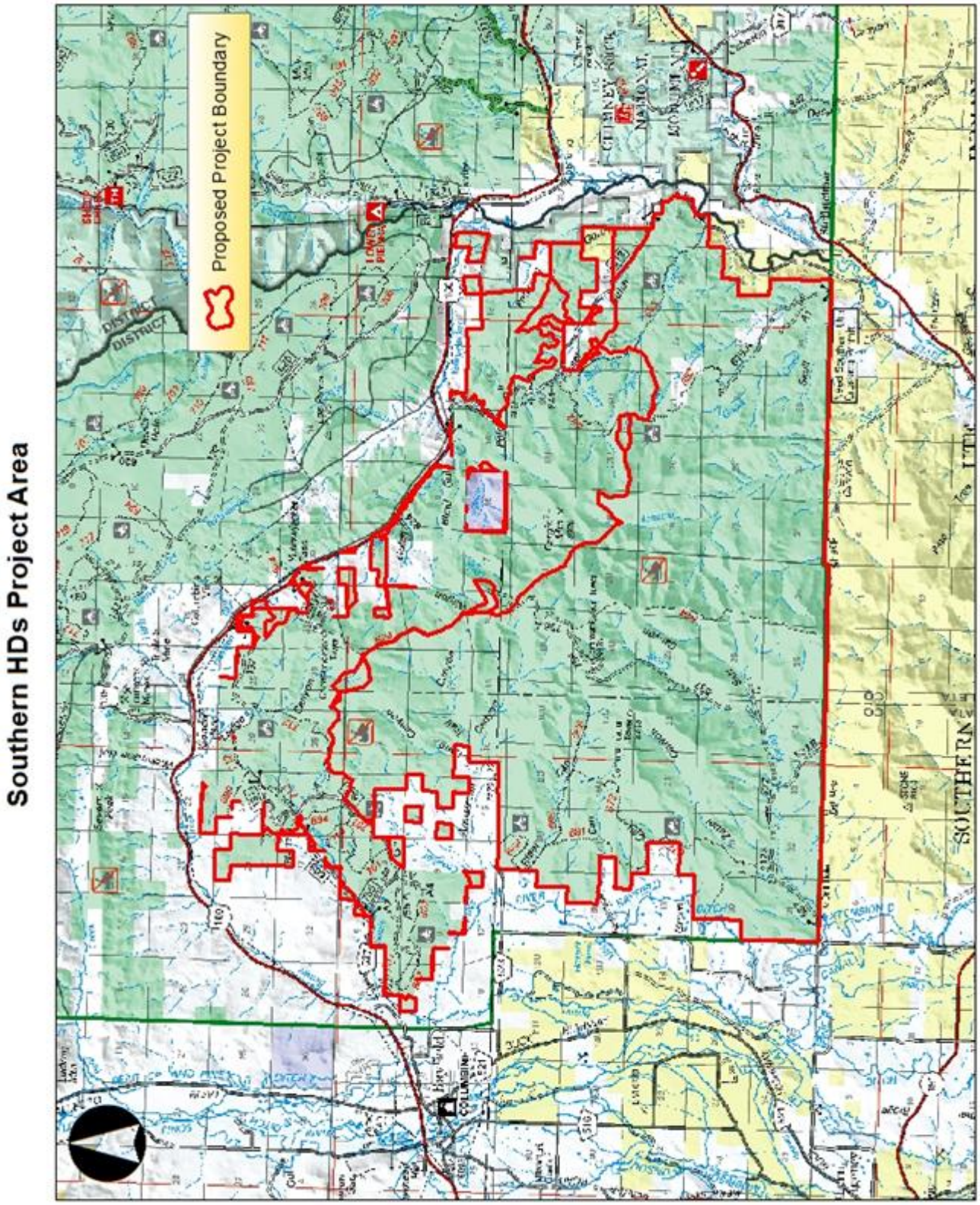
The project area is located within La Plata and Archuleta counties in Colorado. It is located on the southern, western, and eastern flanks of the HD Mountains (Map 1). It is bordered to the north by Highway 160, by Southern Ute Indian Land to the south, by the Piedra River to the east, and by private land to the west. Topography of the project area is diverse and is divided by numerous drainages, steep rocky cliffs, relatively flat benches, open meadows and rocky south-facing slopes. Elevations of the project area range from about 6,400 feet to 8,700 feet.

Pinyon and juniper trees are the dominant tree species in the project area, with Gambel oak the dominant shrub in the understory. There is also ponderosa pine, mountain shrublands and warm-dry mixed conifer vegetation types. In addition, isolated pockets of aspen, mountain shrubs and

sagebrush are interspersed throughout the project area. Legal description: Townships 34-35 North, Ranges 5-6 West.



Map 1. Vicinity Map



Map 2. Southern HDs Restoration project area relative to Bayfield, Colorado.

Proposed Action

The proposed action is to use a combination of mechanical treatment, hand treatment, managed grazing in the form of goats, and prescribed fire on approximately 35,000 acres of National Forest land in order to move the project area towards a more fire resilient assemblage and structure of tree and shrub species. The entirety of the project is expected to be implemented in phases over several years, depending on available budgets, contractor schedules, weather conditions and other unpredictable factors. Activities within smaller individual treatment units would generally be accomplished within one or two operating seasons.

The proposed action would also include using approximately nine miles of system road and potentially using about one mile of temporary routes. Temporary routes would be used to drive equipment into treatment units across the existing ground surface. They would be temporary in nature, would generally not require blading except in isolated spots, and would be rehabilitated after treatment as each applicable treatment unit is finished.

Project activities would follow requirements of existing laws, regulations, and policies, including standard best management practices, Forest Service Handbooks and San Juan National Forest Plan (2013) guidance.

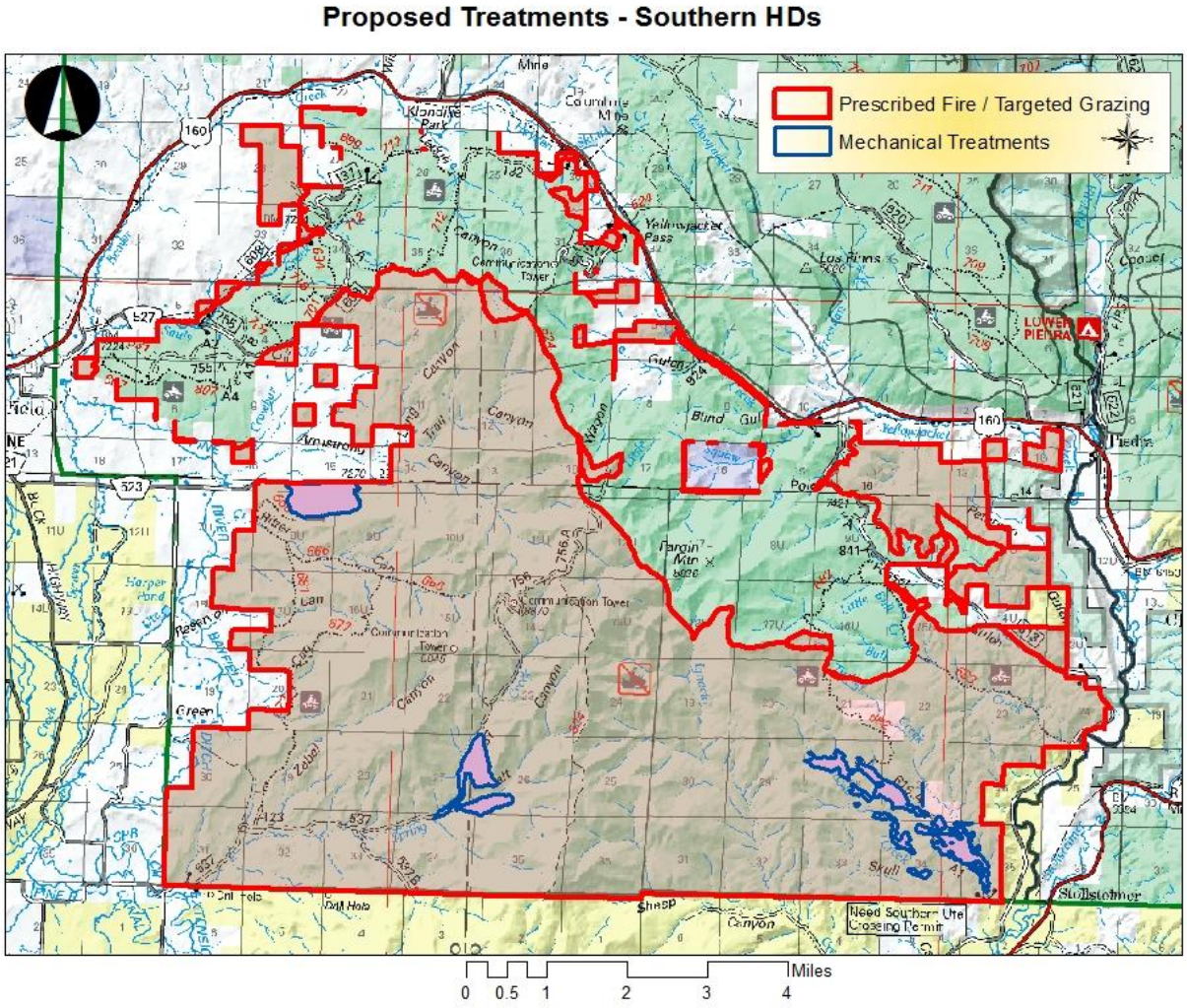
Prescribed fire treatment would encompass the entire proposed 35,000 acre project area. All treatment areas could include a variety of burning treatments including broadcast burning, aerial burning, pile burning, air curtain or any combination of all these. Prescribed burning also requires the clearing or maintenance of control lines, which would be installed by hand for this project; control lines could also include existing roads, trails, pipeline corridors, natural rock features or other open areas. These handlines often consist of a "cut" of 5-15 feet in width, along with a "scrape" of 12-18". The cut denotes the area where vegetation is cut and removed, the scrape is the area where surface fuel is scraped away down to mineral soil. Support of fire crews would include use of motorized vehicles such as fire engines, pickup trucks, and off-highway vehicles.

Mechanical treatment areas would cover 761 approximately acres, delineated in Map 3 following this page. These forested lands would be thinned to control stand structure and favor desired trees, emphasizing removal of smaller diameter trees. The intent would be to restore stands to a lower overall density (50 to 70 square feet of basal area per acre) with numerous openings interspersed with variable-density clumps of trees. Thinning may be accomplished by a variety of methods which could include rubber-tired or tracked skidders, forwarders, mechanical harvesters, and stroke de-limbers. Slash generated by thinning operations may be piled and burned, mulched, lopped and scattered, and/or removed for use in biomass utilization facilities for electricity production or other purposes.

Mechanical equipment such as a Hydro-mower or Hydro-axe may be used to masticate vegetation within the project area. Mastication would include treating Gambel oak and other brush species in a mosaic pattern creating clumps and openings, removing ladder fuels, creating age class diversity and changing the vertical arrangement of vegetation. Re-sprouting from roots of treated brush will occur. A mosaic of mature oak would be retained within the project area to benefit wildlife and create diversity within the vegetation. Treatment boundaries proposed for

mechanical thinning were identified as result of on-the-ground field reconnaissance, vegetation type, stand configuration, and topography. Operations will use existing roads or existing closed roads, some non-system roads exist but some reconstruction and/or new temporary road construction may be required.

Managed grazing may be used to establish or maintain firelines or to remove undesirable densities of oakbrush and other woody and herbaceous species. This means of controlling vegetation would most likely be accomplished by goats contracted from commercial sources. Goats would be delivered by trucks to the proposed project site. A hearder with perhaps several dogs would conduct the goats to the target area for grazing. Temporary electric fences may be installed to delineate the area to be grazed. The electric fences would likely require very minor limbing of vegetation on site to permit the fence to be installed. Herders would crowd and move goats as consuming of the shrubs meets structural stage goals. Water would be transported to the site to maintain the goat heard and would be removed upon completion of the project.



Map 3. Southern HDs Restoration treatment units.

Project Design Features

The following project design features are depicted by resource area. These features are designed to attend to specific attributes of the affected environment, such as soil conservation, watershed protection, vegetation, cultural and wildlife resources. Items are presented in "bullet" format to facilitate finding specific requirements.

Soils

- When soils are saturated, equipment operations would cease until the ground dries out or freezes. Soils are considered saturated when ruts created by equipment are four inches deep beyond the lug tread of the tire for ten feet or longer. Limit equipment operations to sustained slopes less than 35%. Limit soil disturbance to less than 15% of the treated area.

Watershed

- Do not masticate or cut vegetation that is growing within or on the banks of defined stream channels, gullies or ditches. Do not masticate or cut more than 50% of the vegetation within 25 feet of defined drainages, gullies, ditches, wetlands or ponds.

- Equipment shall not be operated in stream channels except to ford at crossings designated by the Forest Service. Cross perpendicular to the direction of flow and do not cross where banks exceed 30% slope.

- Drainage must be provided on roads that would be used for hauling logs. Minimize connected disturbed areas.

- Locate skid trails and other overland access routes primarily along the contour. Routes shall be rehabilitated upon completion of use by returning them to the original grade, water barring, spreading slash and/or seeding as necessary.

- Landings shall not be placed within 100 feet of perennial or intermittent streams. Landings shall be rehabilitated upon completion of use by ditching and/or sloping to permit water to drain and spread. Cut and fill banks around landings shall be sloped to remove overhangs and otherwise minimize erosion. Landings would be ripped or scarified and seeded.

- Operations shall be conducted to prevent debris from entering perennial or intermittent stream courses. In the event that debris enters stream courses in amounts that may adversely affect the natural flow of the stream or water quality, such debris would be removed as soon as practicable, but not to exceed two days during periods of actual or expected flow and in an agreed manner that would cause the least disturbance to the stream course.

Vegetation

- Pre-settlement trees would be protected except those that that have been identified as a safety risk. Pre-settlement trees are those established prior to 1880 and can be identified by the relatively smooth orange bark with large plates and irregular flat-topped crowns.

- Where possible, avoid treatment of Gambel oak greater than six inch diameter at the root collar. Gambel oak retained should be left in a mosaic pattern consisting of clumps ranging in size from a tenth of an acre to ten acres.

- Slash generated by the project should be piled in most areas for later burning. In some areas with a low density of slash, it may be scattered over the ground surface and not exceed six inches in depth.

- Stumps from cut trees should not exceed 12 inches height above the ground as measured from the uphill side.

- Do not masticate or cut riparian or wetland species such as willows or cottonwoods.

- Pre-treatment of noxious weeds in areas that may experience ground disturbance (i.e. landings, mastication units, etc.) would be administered before project implementation. All equipment brought into the project area would be cleaned and inspected prior to operating. Post treatment of noxious weeds will be administered upon project completion. Infestations of noxious weeds will be inventoried, monitored and treated as necessary within the project area for a minimum of five years after the project is complete.

- Identification materials of special status plant species will be provided to operators and crews so they may avoid unintentionally trampling or uprooting these species.

- If Knowlton's cactus *(Pediocactus knowltonii)* is found within the project area before or during implementation, project activities will cease until the Forest Service is notified and mitigation measures are applied.

Cultural Resources

- The procedure set forth in the 2017 Programmatic Agreement among the United States Forest Service, Rocky Mountain Regional Office, Pike-San Isabel National Forest and Cimarron and Comanche National Grasslands, Routt National Forest, San Juan National Forest and the Colorado State Historic Preservation Officer Regarding Vegetation Management Undertakings (PA) would be followed to satisfy compliance with Section 106 of NHPA. The PA may be used for landscape-scale vegetation management undertakings implemented in phases and for which effects to historic properties have not been fully determined prior to the NEPA decision. Appendix D of the PA: Site Protection Measures identifies a strategy and activity-specific design features intended to mitigate potential adverse impacts of the proposed activities on cultural resources.

- If a previously undocumented historic property is discovered, or if inadvertent effects occur to a historic property, all work in the vicinity of the property shall cease and a San Juan National Forest archaeologist shall be notified immediately. The property shall be protected and project activities in the immediate vicinity of the property shall not resume until any actions necessary to resolve adverse effects to the property have been completed.

- Upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony, a San Juan National Forest archaeologist shall be immediately notified by

telephone, with written confirmation. All project activities shall cease in the vicinity of the discovery, and the discovery shall be protected for 30 days, or until the contractor is given notice to proceed by a San Juan National Forest archaeologist or a San Juan National Forest timber sale administrator.

Wildlife

- Except for purposes of safety or in preparing the shaded fuel break, no snags 16" dbh or greater would be cut.

- Prior to prescribed fire, protect Class I and Class II snags of ponderosa pine or Douglas-fir that are 16" dbh or greater.

- Where possible, retain green trees with spiked tops, cavities, lightning scars, etc. Regardless of size, trees with apparent multiple cavities should be retained if possible during mechanical or burning operations.

- Where possible, retain snags in groups along ridge tops, upper portions of canyons, stream bottoms and on edges of forest openings.

- If an active raptor nest is discovered during layout or implementation, the district biologist will be consulted for mitigation actions.

- Timber crews preparing mechanical treatment units would be trained in identifying northern goshawks and their nests. If an active goshawk nest is discovered, treatments would be modified to be consistent with forest plan requirements.

- In mapped critical winter range, which is the combination of severe winter range and winter concentration areas, from 1 December through 30 April, mechanical and prescribed fire burning operations would generally be limited to no more than two active work locations at one time. If treatment occurs during the restriction period, operating hours would be between 0900 and 1500. For prescribed fire operations only, operating hours may be extended to 1700 on up to three days once during the period of 1 December to 30 April.

- In mapped elk and deer winter range, from 1 December through 30 April, mechanical operations would generally be limited to no more than four active work locations at one time. If treatment occurs during the restriction period, operating hours would be between 0900 and 1500. Mechanical operations include chain saw work in hand thinning units, mastication, timber sale operations and biomass removal. Prescribed fire burning, pile burning and hand-line construction are not restricted at any time.

- At the known peregrine falcon eyrie, no treatments would occur within a half mile from 15 March through 1 July except as may be modified by the district ranger, in consultation with the district biologist.

- No treatment would occur within 300 feet of potential southwestern willow flycatcher habitat.

Project Access/Visual Quality

- Leave visual screening dispersed along roads and trails where there are sight line or travel management concerns.
- Leave visual screening between existing and proposed gas well pads and nearby houses and roads.
- Coordinate access route alignments to utilize the same alignments as proposed gas well roads.
- Cross-country and overland vehicular travel and fire control lines will be rehabilitated as necessary to discourage public use by Off-Highway Vehicles (OHVs).
- Overland access routes would be temporary in nature, would generally not require blading except in isolated spots and would be rehabilitated after treatment as each applicable treatment unit is finished.
- Activities within smaller individual treatment units would generally be accomplished within one or two operating seasons.

Miscellaneous

- Section corners and survey monuments would be protected.
- No temporary road construction would occur in Colorado Roadless Areas; temporary overland motorized use is allowed and will be minimized to the extent possible.
- Notify gas producers operating in the proposed project area, adjacent landowners and grazing permittees in advance of prescribed burning.

Project Access and Timing

- The proposed action would also include using approximately nine miles of National Forest System (NFS) roads and potentially using up to four miles of overland motorized routes. Motorized routes would be used to drive equipment into treatment units across the existing ground surface. They would be temporary in nature, would generally not require blading except in isolated spots and would be rehabilitated after treatment as each applicable treatment unit is finished.
- The entirety of the project is expected to be implemented in phases over several years, depending on available budgets, contractor schedules, weather conditions and other unpredictable factors. Activities within smaller individual treatment units would generally be accomplished within one or two operating seasons.

Existing Vegetation

See the vegetation affected environment sections of the Environmental Assessment (EA) for a detailed description of current vegetation and wildlife habitat conditions in the Southern HDs Restoration area.

The proposed project would treat approximately 35,000 acres with prescribed fire. Prior to conducting prescribed fire, some mechanical treatment units within the prescribed fire boundary would be either harvested for biomass material, mowed by a Hydro-axe or Hydro-mower, cut and transported to a mill for saw timber or cut, piled and burnt. These mechanical treatments would occur on approximately 761 acres.

The following table depicts acres treated by prescription. The first two columns depict vegetation affected by mechanical and prescribed fire.

Table 1. Vegetation by treatment type.

Vegetation Type	Mechanical	Prescribed Fire / Targeted Grazing
Desert grasslands	0	673
Desert Shrubs	1	163
Mountain grasslands	0	131
Mountain shrubs	173	8,600
Riparian	10	50
Sagebrush shrubland	9	634
Aspen	0	3
Aspen with conifer	0	442
Cool moist mixed conifer	0	877
Warm dry mixed conifer	13	2,468
Pinyon – juniper	95	11,242
Ponderosa pine	460	9,270
Non-riparian willow	0	10

Field Reconnaissance

Field visits to the proposed project area were conducted in the summer and fall of 2020 and in the spring of 2021 by Albert Fischer, wildlife biologist.

Federally Listed Species

Consultation History

This project has not been consulted upon either formally or informally prior to the preparation of this biological evaluation.

Table 2. Federally listed species for the San Juan National Forest based on 19 May 2021 Information for Planning and Conservation (IPaC) species list from the U.S. Fish and Wildlife Service.

Species	Federal Status	Habitat present in treatment units	Effect
New Mexico meadow jumping mouse	Endangered	No – suitable complex streamside riparian absent	No effect

Species	Federal Status	Habitat present in treatment units	Effect
Mexican spotted owl	Threatened	No –narrow rock-walled canyons with mixed-conifer absent	No effect
Southwestern willow flycatcher	Endangered	No – thick willow in adequate size absent	No effect
Western yellow-billed cuckoo	Threatened	No –gallery cottonwood absent	No effect

Species Considered and Dismissed From Further Evaluation

Mexican spotted owl *(Strix occidentalis lucida)*

Between 1989 and 2003, a cumulative total of 495,905 acres had been surveyed to protocol standards on the San Juan National Forest without detecting a single Mexican spotted owl. Many areas were surveyed several times. There has been only one confirmed occurrence of a Mexican spotted owl on the Forest, a nonbreeding second-year male found repeatedly in late-summer 2004 in the same general area on the Pagosa Ranger District. Additional surveys in 2005 failed to relocate this individual.

Based on field visits to the analysis area I have determined that the Southern HDs Ecosystem Restoration project area contains no suitable breeding habitat for Mexican spotted owls because there are no narrow rock-walled canyons with mature mixed–conifer forests. The treatment units contain primarily ponderosa pine, Gambel oak and warm-dry mixed conifer stands. Therefore I conclude that the proposed action will have "no effect" on Mexican spotted owl and on owl habitat.

New Mexican meadow jumping mouse *(Zapus hudsonius luteus)*

The New Mexico meadow jumping mouse is listed as an Endangered species. It is restricted to complex riparian habitat with dense and diverse streamside vegetation over two feet tall and with a key habitat component of tall sedges, usually within 150 feet of permanent free-flowing water. They are found primarily in both streamside riparian and wet meadow habitats at low to moderate elevations (Morrison 1992). This species is restricted to lowland valleys and montane stream courses in New Mexico, Arizona and extreme southwestern Colorado.

Jumping mice have been found at two locations in La Plata County, one at 6,800 feet and the other at 7,200 feet along the Florida River east of Durango (Frey 2008). A specimen was also collected along Sambrito Creek near the New Mexico Border in Archuleta County at an elevation of 6,100 feet (Frey 2008). In Colorado, Frey suggest that "Ideally, in the San Juan PLC [Public Lands Center] additional surveys should focus on areas below 7,611 feet, which was the upper threshold of the 95% confidence intervals for recent capture locations in the zone of sympatry [with *Z. h. princeps*]. However, areas up to ca 8,000 elevation may also be considered if the ecological situation seems appropriate (i.e., below the mixed coniferous forest zone, large area of potentially suitable habitat and presence of corridors to other potential areas (Frey 2011).

Field visits to the proposed project area failed to locate any habitat considered suitable for the New Mexico meadow jumping mouse. The best site, located at Squaw Creek, is 15 miles from the nearest known occupied site with no apparent connectivity between the two sites (USDI 2013d). The Squaw Creek site also does not have dense herbaceous riparian vegetation of the stature, typically greater than two feet height, necessary for this species. Therefore, due to lack of habitat and no known nearby populations, and the project being proposed avoids riparian areas, the effects determination for this species is "no effect."

Southwestern willow flycatcher *(Empidonax traillii extimus)*

Based on field visits to the treatment units I found no willow patches that were of sufficient size or stature to meet the current U. S. Fish and Wildlife Service definition of habitat for southwestern willow flycatcher (Finch and Stoleson 1999, USDI 2003). Southwestern willow flycatchers have never been documented in the area, nor on the Columbine Ranger District. Therefore, I conclude that the proposed action would have "no effect" on the southwestern willow flycatcher because there is no habitat in or immediately adjacent to the proposed treatment units and the proposed project would avoid any patches of willow that may be discovered in the course of implementing this project by 300 feet.

Western yellow-billed cuckoo *(Coccyzus americanus)*

The western yellow-billed cuckoo is listed as a Threatened species under the Endangered Species Act. Cuckoos have not been documented to occur on lands managed by the San Juan National Forest nor the nearby BLM Field Office. There have been no confirmed cuckoo sightings in the Animas River Valley in decades.

There are no low-elevation gallery cottonwood forests with dense understory in the proposed treatment area. Within the proposed project area there are some cottonwood trees along Squaw and Sauls creeks but its limited extent precludes these small riparian areas from being habitat for cuckoos. Because there is no habitat in or near the landscape, this proposal would have "no effect" to the western yellow-billed cuckoo nor its habitat.

Cumulative Effects

Because there are no direct or indirect effects to any federally listed species, there are no cumulative effects.

Summary

There is no habitat within the project area for any federally listed species.

Forest Service Sensitive Species

The following table lists species considered in this report and whether they have habitat in the proposed project area.

Determinations for each species are made in the following section. Specific project effects are discussed in more detail for those species with habitat present in treatment units and that are likely to be affected by the proposed action. The process employed to evaluate the potential

effects the proposed action could have on Sensitive Species is described in the Forest Service Manual.

The following Table 3 lists the terrestrial Sensitive Species from the 2018 list that are known to occur, may occur, or have habitat on the SJNF. Information on the habitat requirements, status, distribution, abundance and key habitat components of Sensitive Species is on file at the Columbine Ranger District office in Bayfield, Colorado.

Table 3. Forest Service Region 2 Sensitive terrestrial Fish and Wildlife Species list for the San Juan National Forest based on December 2018 (FSM R2 Supplement 2600).

Species	Habitat Present In Project Treatment Units [Yes/No]	Species or Habitat Impacted by Project (Yes/No)?	Habitat Description	Effects Determination
MAMMALS				
American marten	No	No	Mature spruce/fir and mixed conifer forests with complex physical structure.	"No impact"
Desert bighorn sheep	No	No	Rocky canyons, grass, low shrub, open habitat with adjacent steep rocky areas for escape and safety. Might occur on Dolores RD; does not occur on Columbine or Pagosa RDs.	"No impact"
Fringed myotis	Yes	Yes	Desert, grassland and woodland habitats. Roosts in caves, mines, rock crevices, buildings, and other protected sites.	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"
Gunnison's prairie dog	No	No	High mountain valleys and plateaus at 6,000 – 12,000 feet; open or slightly brushy country, scattered junipers and pines. Burrows usually on slopes or in hummocks.	"No impact"

Species	Habitat Present In Project Treatment Units [Yes/No]	Species or Habitat Impacted by Project (Yes/No)?	Habitat Description	Effects Determination
Hoary bat	Yes	Yes	Associated with foliage in trees, mainly ponderosa pine, piñon/juniper and riparian forest.	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"
River otter	No	No	Stream and river riparian	"No impact"
Rocky Mountain bighorn sheep	No	No	Open or semi-open habitats, often in precipitous terrain and the adjacent benches and mesa tops, most commonly in alpine, grassland, shrub-steppe and rocky areas.	"No impact"
Spotted bat	No	No	Pinyon-juniper, shrub desert, possibly riparian.	"No impact"
Townsend's big-eared bat	No	No	Forages in semi-desert shrublands, pinyon-juniper woodlands and open montane forests. Roosts in caves, mines and mature forests.	"No impact"
BIRDS				
American bittern	No	No	Marsh, swamp, or bog with cattails, rushes, grasses, & sedges	"No impact"
Black swift	No	No	Nests behind or next to waterfalls and wet cliffs. Forages over forests and open areas.	"No impact"
Boreal owl	No	No	Mature spruce/fir and mixed conifer forested areas with preference for wet situations (bogs or streams) for foraging	"No impact"

Species	Habitat Present In Project Treatment Units [Yes/No]	Species or Habitat Impacted by Project (Yes/No)?	Habitat Description	Effects Determination
Brewer's sparrow	Yes	Yes	Strongly associated with sagebrush in areas with scattered shrubs and short grass; to lesser extent in mountain mahogany, rabbit brush, and bunchgrass grasslands with shrubs or large openings in pinyon-juniper.	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"
Burrowing owl	No	No	Open grasslands associated with prairie dogs. Nests and roosts in burrows dug by mammals or other animals. Not known to occur on Columbine or Pagosa RDs.	"No impact"
Columbian sharp-tailed grouse	No	No	Oak/serviceberry shrublands, often interspersed with sagebrush; aspen forests; irrigated pasture. Recently reintroduced near Dolores, not known to occur on Columbine or Pagosa RDs.	"No impact"
Ferruginous hawk	No	No	Open grasslands and shrub steppe communities. Nests in tall trees or shrubs along streams or on steep slopes. Not known to nest on or near SJNF, but is winter visitor and can occur during non-breeding season.	"No impact"
Flammulated owl	Yes	Yes	Depend on cavities for nesting, open forests for foraging, brush for roosting. Occupy open ponderosa pine or forests with similar features (dry montane conifer or aspen, with dense saplings).	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"

Species	Habitat Present In Project Treatment Units [Yes/No]	Species or Habitat Impacted by Project (Yes/No)?	Habitat Description	Effects Determination
Lewis's woodpecker	Yes	Yes	Open pine forests, burnt over areas with snags and stumps, riparian and rural cottonwoods, and pinyon-juniper woodlands.	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"
Grasshopper sparrow	No	No	Grasslands. Does not breed on the San Juan National Forest	"No impact"
Loggerhead shrike	Yes	Yes	Grassy pastures that are well grazed. Nests in shrubs or small trees, preferably thorny such as hawthorn.	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"
Northern goshawk	Yes	Yes	Mature forest generalist, often found in mixed conifer/aspen stands.	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"

Species	Habitat Present In Project Treatment Units [Yes/No]	Species or Habitat Impacted by Project (Yes/No)?	Habitat Description	Effects Determination
Northern harrier	No	No	Marshes, meadows, grasslands, and cultivated fields. Nests on the ground, commonly near low shrubs, in tall weeds or reeds, sometimes in bog; or on top of low bush above water, or on knoll of dry ground, or on higher shrubby ground near water, or on dry marsh vegetation.	"No impact"
Olive-sided flycatcher	Yes	Yes	Mature spruce/fir or Douglas-fir forests with preference for natural clearings, bogs, stream and lake shores with water-killed trees, forest burns and logged areas with standing dead trees.	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"
Purple martin	No	No	Mature pure aspen stands near streams, springs, or ponds. Breeds on Dolores RD. Not known to occur on Columbine or Pagosa RDs.	"No impact"
Sage sparrow	No	No	Large expanses of sagebrush. Found on the Dolores Ranger District but not the other districts	"No impact"
Short-eared owl	No	No	Open habitats including grasslands, marsh edges, shrub-steppe and agricultural lands. Requires taller grass cover than northern harrier	"No impact"

Species	Habitat Present In Project Treatment Units [Yes/No]	Species or Habitat Impacted by Project (Yes/No)?	Habitat Description	Effects Determination
White-tailed ptarmigan	No	No	Alpine tundra, especially in rocky areas with sparse vegetation. Summer habitats include moist, low-growing alpine vegetation. Canopy cover of willow at winter feeding sites preferred.	"No impact"
AMPHIBIANS				
Boreal toad	No	No	Wetlands in spruce/fir forest, near water and alpine meadows.	"No impact"
Northern leopard frog	Yes	Yes	Riparian and wetland areas.	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"
INSECTS				
Great Basin silverspot	No	No	Spring fed and/or subirrigated wetlands at low (7500 feet or less) elevation; larval food plant *Viola nephrophylla*; wet meadows interspersed with willows and other woody wetland species; adult nectar sources (mostly composites).	"No impact"
Monarch butterfly	Yes	Yes	Herbaceous growth with adequate nectar sources and are dependent upon milkweed plants *(asclepiad).*	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"

Species	Habitat Present In Project Treatment Units [Yes/No]	Species or Habitat Impacted by Project (Yes/No)?	Habitat Description	Effects Determination
Western bumblebee	Yes	Yes	Generalist pollinator of flowing plants.	"may impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"

Forest Service designated Sensitive Species that do not have habitat in treatment units.
Of the terrestrial wildlife species currently designated as Sensitive in the Rocky Mountain Region, several do not have habitat in the proposed project treatment areas and would not be in any way affected by the proposed project. Those species, identified in the preceding table, are dropped from further evaluation due to lack of habitat or presence in the treatment units and the effects determination for the proposed action is "**no impact"** for each of those species.

Forest Service designated Sensitive Species with habitat in the analysis area
The following Sensitive Species have habitat within the proposed project area and may be present for some time of the year. Those species are the Brewer's sparrow, flammulated owl, fringed myotis, hoary bat, Lewis's woodpecker, loggerhead shrike, northern goshawk, Monarch butterfly, northern leopard frog, olive-sided flycatcher and western bumblebee.

Brewer's sparrow (Spizella breweri)
Brewer's sparrow is considered a sagebrush obligate species most closely associated with sagebrush communities dominated by big sagebrush (Artemisia tridentata) that have abundant scattered shrubs and short grass (Lambeth 1998, Yanishevsky and Petring-Rupp 1998, Paige and Ritter 1999). It is also found in desert shrublands dominated by big sagebrush, rabbitbrush, saltbush and greasewood. It occurs in shrubby openings in pinyon and juniper woodlands. Sparrow abundance is correlated with abundance of shrubs and cacti, forbs and the percent of bare ground. Flat and gently rolling terrain is preferred by this species to steeper terrain. Large areas of relatively uniform shrub cover are preferred over areas of greater habitat diversity (Yanishevsky and Petring-Rupp 1998). Brewer's sparrows appear to thrive in areas where sagebrush is maintained in tall, clumped and vigorous stands.

Where Brewer's sparrow is found breeding, it is usually the most abundant breeding bird species and densities can be very high. Historically, it may have been the most abundant bird in the Intermountain West (Paige and Ritter 1999). National population trend estimates show Brewer's sparrow populations are declining steadily and significantly across the American West, with sharp declines since 1980 in Colorado.

The proposed project area does not have large expanses of big sagebrush; approximately 25 percent of the sagebrush present is A. tridentata. The sagebrush in the project area is probably not in the structural stage described as most preferred by Brewer's sparrows as having "middle height" (Petersen and Best 1987). The stature of sagebrush is such because the area is heavily used by wintering deer and elk, species which consume a considerable amount of sagebrush in the winter. Also, some grazing occurs by permitted range cattle, although this is likely a lesser affect to sagebrush than foraging by big game species.

Direct and Indirect Effects

There is a total of about 5,045 acres of Brewer's sparrow habitat in the Southern HDs Ecosystem Restoration treatment units. The primary concern for Brewer's sparrow is the loss of sagebrush habitat. Sagebrush is concentrated primarily in the southwestern portions of the project area and on the fringes of open meadows in other parts of the proposed project. Although some burning may intersect sagebrush stands, personnel implementing the project will minimize the amount of sagebrush that may be burnt in the course of conducting a prescribed fire. This would reduce the effects of this proposal upon sparrow habitat capability where it currently exists. Kingerly also records that "Moderate, incomplete burns in sagebrush, the kind typical of prescribed fires, do not harm important components of nesting habitat (Petersen and Best 1987)."

Targeted grazing by goats and mechanical treatments would not likely occur in vegetation that serves as habitat for this species. Although there may be some exposure of Brewer's sparrow to human activity that could result in disturbance to this species. It is expected that the disturbance would be short and inconsequential to this sparrow.

Cumulative Effects

Sagebrush is perhaps the vegetation type that has been most heavily modified from its condition prior to European settlement, due to land use conversion to agriculture, livestock grazing, changes in fire regimes and invasions by non-native grasses with subsequent declines in bird populations (Saab and Rich 1997, Paige and Ritter 1999, Rich et al. 2004). The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands, is contributing to slight declines in the amount and extent of Brewer's sparrow habitat in and around the project area. The Coal Bed Methane project estimated that oil and gas development alone would impact about 7% of sagebrush habitat in the cumulative effects analysis area (USDA Forest Service 2006b).

Project design criteria adopted by the Sauls Creek fuels project are intended to reduce the loss of sagebrush habitat while also resulting in a long term improvement in sagebrush condition and extent. Prescribed fire treatments in 2013 and 2014 amounted to 1,090 and 1,108 acres respectively. Design features of that proposal included "Do not intentionally burn within sagebrush parks, and where feasible, avoid burning stands where sage plants are present." Burning to the edge of sagebrush parks is acceptable where the objective is to remove juniper and pine (San Juan National Forest 2011).

The Sauls Creek mechanical treatment project had similar protections for sagebrush. Only 188 acres of sagebrush were in treatment units proposed for mastication. That project proposed

mowing invading pinyon and juniper trees as well as Gambel oak in three units to result in a long term improvement of sagebrush vegetation. Project design criteria minimized the mowing of sagebrush. Mastication work on that project occurred in 2010. Thinning operations took place in 2009 through 2012 (San Juan National Forest 2007).

Other projects in the vicinity of this one have only marginally affected sagebrush stands. Raven Ridge, Haden Creek and the HDs fuels reduction project removed some sagebrush incidental to mowing and harvesting equipment moving among the various treatment units. Those units are forested and therefore would not likely have Brewer's sparrow habitat present except along the edges of treatment units. However, a goal of those treatments was to reduce pinyon and juniper stands that were encroaching upon sagebrush meadows (San Juan National Forest 2004, 2009).

The Bull and Lange canyons prescribed fire treatments occurred on 2,039 and 1,623 acres respectively. Those treatments reduced sagebrush only marginally and probably had the overall effect of removing pinyon and juniper that was otherwise precluding or inhibiting sagebrush growth and distribution.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

Effects Determination

The proposed project would result in some minor loss of sagebrush where fire intersects this vegetation type despite project design features intended to minimize sagebrush loss. There would be a small disturbance affect to this species dependent upon when fire is applied to the project area and possibly as a result of mechanical treatments and transportation of animals to conduct targeted grazing. Therefore it is my determination that the proposed action "**may adversely impact individuals but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing, or loss of species viability rangewide**" for the Brewer's sparrow.

Flammulated owl *(Otus flammeolus)*

The flammulated owl is perhaps the most common raptor of the montane pine forests of the western United States (McCallum 1994). This species is a neotropical migrant that winters in

Mexico and north to southern California (DeGraaf et al. 1991). It is a western mountain species that breeds locally from southern British Columbia, southern Idaho, and northern Colorado south to southern California, southern Arizona, southern New Mexico, western Texas and from Mexico south to Guatemala (Hayward and Verner 1994, DeGraaf et al. 1991).

The flammulated owl is a tiny obligate secondary cavity nester that is entirely insectivorous (Reynolds and Linkhart 1992). It is associated with mature ponderosa pine, from the lower elevations where the pine is mixed with oak or pinyon pine to the higher elevations where the pine is mixed with Douglas-fir, aspen or fir trees (Reynolds and Linkhart 1992). Foraging habitat includes numerous interior edges, preferred roosting habitat appears to be dense vegetation (McCallum et al. 1994). Owls are found roosting in large Douglas-firs or ponderosa pines with sprawling form. Male foraging, territorial defense, resting, and day roosting were restricted to home ranges averaging about 33 acres (Reynolds and Linkhart 1987).

There have been no structured SJNF inventories for this species. However, during the Mexican spotted owl surveys from 1990 to 1994, they were found on all districts with ponderosa pine. It is listed as an uncommon nester in southwestern Colorado (Durango Bird Club 1992). Owl boxes along the West Prong road, approximately nine miles north of the proposed treatment units, occasionally were used by flammulated owls for nesting. The most recent observation occurred in 2010.

Direct and Indirect Effects

Modeling of flammulated owl habitat shows 11,844 acres of proposed prescribed fire treatment units to be habitat for this species. Based on field surveys and design criteria maintaining large-diameter snags, the proposed action would not affect snags of sufficient size likely to hold potential nesting cavities. Large diameter overstory trees and pre-settlement trees would largely not be affected by the proposed action and thus future sources of nest cavities in snags and large-diameter live ponderosa pine trees would not be significantly reduced.

Flammulated owls favor dense vegetation for roost sites (McCallum et al. 1994). Gambel oak stands growing in forest openings or under thin overstory canopies can be quite dense and may provide suitable roost sites. Most oak growing under closed pine canopies are not dense enough to be suitable for providing flammulated owl roosting habitat. The design criteria protecting, where possible, oak clumps with stems averaging greater than 6" diameter root collar would retain flammulated owl roosting habitat value. The design criteria protecting the largest diameter overstory ponderosa pine trees would also protect and maintain owl roosting and foraging habitat (McCallum et al. 1994). Most large overstory trees would not be physically affected by project implementation, but disturbance to roosting owls may occur.

Treated stands would be more open and are expected to quickly develop grass and herbaceous vegetation in the understory, thereby increasing potential insect prey diversity and abundance for foraging owls, as well as providing better access to the forest floor. Interspersed within these more open stands would be denser clumps of ponderosa pine having a range of size and age classes. Post-treatment stand structure is expected to provide better owl foraging habitat than currently exists by providing increased interior edge and more open stands, improving maneuverability for capturing insect prey (Reynolds and Linkhardt 1992).

If the fuels reduction portion of this project is implemented during summer, machinery operation and human presence may temporarily displace individual owls. There are large amounts of similar habitat available across the analysis area and adjacent landscape where disturbed individuals could temporarily relocate. In comparison to the large amount of suitable owl habitat available in the analysis area and on the Forest, the very small amount of habitat affected by the proposed action is unlikely to alter owl distribution, abundance or use of the treatment units.

Proposed prescribed fire would improve foraging habitat for flammulated owls in the long term, but nesting habitat is unlikely to be affected by fire treatments. The long term improvement in foraging habitat conditions is likely due to the burn reducing the density and continuity of oak in the understory, and lifting canopy base heights, thereby creating more open understory conditions that are more accessible to foraging under overstory stands. Project related effects to this species are expected to be generally beneficial.

Mechanical treatments and targeted grazing would likely not alter the vegetation sufficiently to remove it from being flammulated owl habitat. Those project activities could change the vegetation from roosting to foraging habitat, potentially improving foraging opportunities for this species by opening up the understory. Some areas could be harvested to an extent that the residual basal area, given other site specific conditions, may not be habitat for this species post treatment.

Equipment necessary to implement this project including the mechanical treatments and targeted grazing would result in a temporary disturbance to the species, if present. It is likely that if this species is living in or transiting through proposed treatment areas during active operations they may alter their behavior to avoid equipment and activity at proposed work sites. This may make successful foraging more difficult for flammulated owls.

Cumulative Effects

Raven Ridge fuels reduction project occurred in 2001. That proposal treated primarily pinyon and juniper trees over an area of approximately 318 acres. Some vegetation that may have been suitable to serve as habitat for this species could have been affected by the project. The effects determination would have been "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the flammulated owl.

A project in 2005 in the HD Mountains treated 934 acres of vegetation suitible for this species. The effects determination of that project was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the flammulated owl.

The Hayden Creek mechanical fuels treatment affected approximate 262 acres of vegetation preferred by flammulated owls. Thinning operations conducted in 2005 may move some currently adequately dense ponderosa pine stands to an undesireable character for roosting. The treatment of understory Gambel oak vegetation adjacent to mature and older ponderosa pine reduced stand density and therefore some roosting habitat was lost. The effects determination of the Hayden Creek Mechanical Fuels treatement upon flammulated owls was "may adversely

impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" (San Juan National Forest 2004).

Sauls Creek prescribed fire treated about 2,413 acres across 25 burn units, most of which were stocked with ponderosa pine. In 2013 and 2014 Forest Service personnel treated 1,090 and 1,108 acres of that project's treatment units. The Sauls Creek project evaluation determined that there would be a long-term improvement in foraging habitat for flammulated owls but that habitat conditions and key habitat components would not be significantly negatively affected. Nesting habitat was deemed to be not affected by the proposed action. The effects determination of this prescribed fire proposed action was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for the flammulated owl (San Juan National Forest 2011).

The Sauls Creek mechanical project treated about 2,455 acres of vegetation suitable for flammmulated owls. By 2014, 766 of this project had be masticated and 344 had been thinned. That proposal maintained large-diameter snags of sufficient size likely to hold potential nesting cavities. Large diameter overstory trees and pre-settlement trees were affected by the proposed action, but disturbance to roosting owls possibly occurred. The effects determination of this mechanical fuels treatment was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for the flammulated owl (San Juan National Forest 2007).

In 2001, a prescribed fire was implemented over an area of 1,514 acres. Then in 2003 a mastication project treated 117 acres again in the Sauls Creek area. Both of those projects resulted in a short temporary disturbance effect upon this owl and likely reduced the amount of roosting habitat while increasing the amount of foraging habitat. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the flammulated owl.

The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands is contributing to a continued slight decline in the amount of owl habitat in and around the project area. The Coal Bed Methane project estimated that oil and gas development alone would impact about 2% of 22,325 acres total available owl habitat (USDA Forest Service 2006b). The effects determination was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the flammulated owl.

The Bull and Lange canyons prescribed fire treatments occurred on 2,039 and 1,623 acres of ponderosa pine respectively. Those treatments reduced understory vegetation, mostly smaller diameter Gambel oak, and probably had the overall effect of promoting foraging habitat and reducing roosting sites. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the flammulated owl.

Personal use fuel wood harvesting is also likely to result in a continued gradual reduction in snag density throughout the project area. Most of the trees harvested would be dead standing with

larger diameter dead standing protected from harvest. Fuel wood gathering in probably a small disturbance effect to flammulated owls and is very localized to existing motorized routes. The effect of gathering on stand conditions is likely not a type conversion but is a change from vegetation consistent with roosting to more open stands conducive to foraging.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

Effects Determination

The proposed project would result in some conversion of roosting habitat into foraging habitat except that it is possible that some areas mechanically treated would likely no longer be flammulated owl habitat. There would be a small disturbance affect to this species dependent upon when fire and mechanical treatments and activities associated with targeted grazing are applied to the project area. Therefore it is my determination that the proposed action "**may adversely impact individuals but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing, or loss of species viability rangewide**" for the flammulated owl.

Fringed myotis *(Myotis thysanodes)*

Fringed myotis is part of the long eared myotis group, which is characterized by long ears projecting beyond its muzzle when laid forward (Arizona Game and Fish Department 2003). This species is predominantly found in western North America, occurring from southern British Columbia, Canada, south through southern Mexico (Jones and Choate 1978). It occurs west to the Pacific Coast and east to the Rocky Mountains of Forest Service Region 2 (Keinath 2004). The fringed myotis is known to occur in the following states: Arizona, California, Colorado, Idaho, Nebraska, New Mexico, Montana, Nevada, Oregon, South Dakota, Texas, Utah, Washington and Wyoming. In Colorado, this species appears to inhabit coniferous woodlands and shrublands at elevations up to 7,500 feet (Fitzgerald et al. 1994).

This species is found in ponderosa pine woodlands, greasewood, oakbrush and saltbush shrublands. Fringed myotis are colonial roosting species with colonies of 10 to over 1,000 individuals. Caves, buildings, mines and rock crevices are used as maternity and night roosts while hibernation is documented in caves and buildings only (Bradley and Ports Undated). Day

and night roosts may be in tree hollows, particularly large conifer snags (Philpott 1997). Fringed myotis are most active for the first one to two hours after sunset and remain active up to 4.5 hours thereafter (O'Farrell and Studier 1980).

The fringed myotis has a relatively broad diet, feeding on moths, beetles, caddis flies, ants, bees, wasps and other insects (Freeman 1984). Feeding starts approximately two hours after sunset and is concentrated upon areas near water, over shrubs and woodlands or low over meadows (Armstrong et al. 1984). They forage close to the plant canopy where they pick prey off vegetation during a slow, maneuverable flight (Fitzgerald et al. 1994). Hibernacula have not been studied extensively, but those that have are generally cool and usually in caves or mines with little temperature fluctuation during winter months creating an environment where low metabolic rates can be maintained during hibernation (Cockrum et al. 1996).

Fringed myotis do migrate although the movement is generally a short distance, if at all (Keinath 2004). Maternity roosts are occupied generally from mid-April to mid-May and exodus is in September (O'Farrell and Studier 1975). A single young is born in late June or July. Young are capable of flight approximately 18 days after birth and are indistinguishable from adults in size after three weeks (Keinath 2004).

Direct and Indirect Effects

Modeling of fringed myotis habitat shows 29,960 acres of proposed prescribed fire treatment units to be habitat for this species. Treatment by fire would largely affect the understory and consequently would likely not alter the vegetative structure sufficiently to change the current use of the project area by this myotis. Based on field surveys and design criteria maintaining most large-diameter snags, the proposed action would not affect many snags of sufficient size likely to hold potential roosting sites. Large diameter overstory trees and pre-settlement trees would largely not be affected by the proposed action unless they are a safety concern and thus future sources for roosting in snags and large-diameter live ponderosa pine trees would not be affected by the proposed action.

The mechanical portion of this project would occur in vegetation suitable to serve as habitat for this species. Mechanical treatments would create openings of various sizes in the landscape and consequently would add more edge and interspersion. As a result, foraging opportunities for this species may be improved by the proposed project. Similar to prescribed fire, the project will largely avoid felling or masticating larger diameter trees unless they pose a safey risk. Consequently, few roost trees will be lost as a result of this project.

If this proposal is implemented when bats are present, machinery operation and human presence as a result of the prescribed fire, mechanical treatments and targeted grazing may temporarily displace individuals. There are large amounts of similar habitat available across the analysis area and adjacent landscape where individuals avoiding the area could temporarily relocate. In comparison to the large amount of suitable habitat available in proximity to treatment units, the area of the proposed project treatment units is substantial but not so large as to forestall this species from finding adequate roost sites.

Cumulative Effects

A project in 2005 in the HD Mountains treated 934 acres of vegetation suitible for this species. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the fringed myotis.

The Hayden Creek mechanical fuels treatment affected approximate 262 acres of vegetation preferred by this myotis. The treatment of understory Gambel oak vegetation adjacent to mature and older ponderosa pine increased the amount of openings in the forest and thereby promoted foraging opportunities. The ects determination of the Hayden Creek Mechanical Fuels treatement upon fringed myotis was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" (San Juan National Forest 2004).

Sauls Creek prescribed fire treated about 2,413 acres across 25 burn units, most of which were stocked with ponderosa pine. In 2013 and 2014 Forest Service personnel treated 1,090 and 1,108 acres of that project's treatment units. The Sauls Creek project resulted in a long-term improvement to foraging habitat for fringed myotis. The effects determination of this prescribed fire proposed action was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for the fringed myotis (San Juan National Forest 2011).

The Sauls Creek mechanical project would treat about 2,455 acres of vegetation suitable for fringed myotis. By 2014, 766 acres of this project had be masticated and 344 acres had been thinned. Large diameter overstory trees and pre-settlement trees were not be affected by the proposed action. The proposed action resulted in a long-term improvement to foraging habitat for this bat species but is unlikely to affect bat roosting sites. The effects determination of this mechanical fuels treatment was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for the fringed myotis (San Juan National Forest 2007).

In 2001, a prescribed fire was implemented over an area of 1,514 acres in Sauls Creek. Then in 2003 a mastication project treated 117 acres again in the Sauls Creek area. Both of those projects resulted in a short temporary disturbance effect upon this bat, the loss of some roosting sites and likely increased the amount foraging habitat. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the fringed myotis.

The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands, is contributing to a continued slight decline in the amount of myotis habitat in and around the project area. The Coal Bed Methane project estimated that oil and gas development alone would impact about 0.84 percent of 32,657 acres total available fringed myotis habitat (USDA Forest Service 2006b). The effects determination was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the fringed myotis.

Raven Ridge mastication project treated approximately 318 acres of pinyon and juniper trees in 2001. That proposal removed some vegetation that could have been used for roosting and created some large openings in the forested landscape, some of which would be adequate for foraging. The project also resulted in a short term temporary disturbance to fringed myotis.

The Bull and Lange canyons prescribed fire treatments occurred on 2,039 and 1,623 acres respectively. Those treatments reduced understory vegetation, mostly smaller diameter Gambel oak, and probably had the overall effect of promoting foraging habitat and reducing roosting sites. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the fringed myotis.

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

Personal use fuel wood harvesting is also likely to result in a continued gradual reduction in snag density throughout the project area. Most of the trees harvested would be dead standing with larger diameter dead standing protected from harvest. Fuel wood gathering in probably a small disturbance, if any to this species and is very localized to existing motorized routes. The effect of wood gathering on stand conditions is likely not a type conversion but could remove some trees used by this species for roosting.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

Effects Determination

The proposed project would result in some loss of roosting habitat, especially in the mechanical treatment areas. However openings created by the proposal would result in an increase in foraging areas. There would be a small disturbance affect to this species dependent upon when fire, mechanical treatments and targeted grazing are applied to the project area. Therefore it is my determination that the proposed action "**may adversely impact individuals but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing, or loss of species viability rangewide**" for the fringed myotis.

Hoary bat *(Lasiurus cinereus)*
The hoary bat is the most widespread of all American bats. It ranges from tree line in northern Canada to Guatemala and in South America from Brazil to Argentina and Chile. It is a resident species of Hawaii. In Colorado individuals have been captured at elevations above 9,000 feet (Armstrong et al. 1994).

his bat is generally solitary in its habits and uses foliage in trees as roost sites, sometimes it may use cavities constructed by other species. Moths are the main constituent of their diet, including beetles, flies, grasshoppers, dragonflies and wasps (Black 1972). They tend to forage in open areas, where their diet was composed mostly of moths but also consume large numbers of lacewings (Freeman 1984). This bat emerges in late evening, generally about an hour and a half after sunset. In Colorado, males oversummer, but females rarely are present (Armstrong et al. 1994). Two young are born on average in mid-May, June or early July. Juveniles are capable of flight within a month of being born (Shump and Shump 1982).

Direct and Indirect Effects

Modeling of hoary bat habitat shows 24,327 acres of the proposed project to be habitat for this species. Treatment by fire would largely affect the understory and consequently would likely not alter the vegetative structure sufficiently to change the current use of the project area by this bat. Based on field surveys and design criteria maintaining most large-diameter snags, the proposed action would not affect many snags of sufficient size likely to hold potential roosting sites. Large diameter overstory trees and pre-settlement trees would largely not be affected by the proposed action unless they are a safety concern and thus future sources for roosting in snags and large-diameter live ponderosa pine trees would only be marginally affected by the proposed action.

The mechanical portion of this project, 761 acres of mowing and thinning would create openings of various sizes in the landscape and consequently would add more edge and interspersion. As a result, bat foraging opportunities may be improved by this project. Similar to prescribed fire, the project will largely avoid felling or masticating larger diameter trees unless there is a safey concern. Consequently, few roost trees would be lost as a result of this proposed project.

If this proposal were implemented when bats are present, machinery operation and human presence associated with mechanical treatments, fire preparations and implementation as well as targeted grazing may temporarily displace individuals. There are large amounts of similar habitat available across the analysis area and adjacent landscape where individuals avoiding the area could temporarily relocate. In comparison to the large amount of suitable habitat available in proximity to treatment units, the area of the proposed project treatment units is substantial but not so large as to forestall this species from finding adequate roost sites.

Cumulative Effects

The HD Mountains project of 2005 treated 934 acres of vegetation suitible for this species. The effects determination for that project was “may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide” for the hoary bat.

Raven Ridge mastication project treated approximately 318 acres of pinyon-juniper in 2001. That proposal removed some vegetation that could have been used for roosting and created some large openings in the forested landscape, some of which would be adequate for foraging. The project also resulted in a short term temporary disturbance to hoary bats.

The Hayden Creek mechanical fuels treatment affected approximate 262 acres of vegetation preferred by this bat. Thinning operations conducted in 2005 removed some roost trees. The treatment of understory Gambel oak vegetation adjacent to mature and older ponderosa pine increased the amount of openings in the forest and thereby promoted foraging opportunities. The effects determination of the Hayden Creek Mechanical Fuels treatement upon hoary bat was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" if the hoary bat were to have been a Forest Service Sensitive species at the time of the project being evaluated (San Juan National Forest 2004).

Sauls Creek prescribed fire treated about 2,413 acres across 25 burn units, most of which were stocked with ponderosa pine. In 2013 and 2014 Forest Service personnel treated 1,090 and 1,108 acres of that project's treatment units. The Sauls Creek project resulted in a long-term improvement in foraging habitat for hoary bat. The effects determination of this prescribed fire proposed action was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for the hoary bat (San Juan National Forest 2011).

The Sauls Creek mechanical project treated about 2,455 acres of vegetation suitable for this bat species. By 2014, 766 acres of this project had be masticated and 344 acres had been thinned. That proposal is maintaining large-diameter snags of sufficient size likely to hold potential roosting sites. Large diameter overstory trees and pre-settlement trees were not be affected by the proposed action. The proposed action resulted in a long-term improvement in foraging habitat for this bat species but is unlikely to affect bat roosting sites. The effects determination of this mechanical fuels treatment was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for the hoary bat.

In 2001, a prescribed fire was implemented over an area of 1,514 acres. Then in 2003 a mastication project treated 117 acres again in the Sauls Creek area. Both of those projects resulted in a short temporary disturbance effect upon this bat, the loss of some roosting sites and likely increased the amount foraging habitat. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the hoary bat (San Juan National Forest 2007).

The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands, contributed to a continued slight decline in the amount of hoary bat habitat in and around the project area. The Coal Bed Methane project predicted that oil and gas development alone would impact about 0.84%% of 32,657 acres total available fringed myotis (USDA Forest Service 2006b). The effects determination was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to

federal listing or a loss of species viability rangewide" for fringed myotis. Presumeably the effects determintation would have been the same for hoary bat if the hoary bat had been on the Forest Service Sensitive list at the time this proposal was being evaluated.

The Bull and Lange canyons prescribed fire treatments occurred on 2,039 and 1,623 acres respectively. Those treatments reduced understory vegetation, mostly smaller diameter Gambel oak and probably had the overall effect of promoting foraging habitat and reducing roosting sites for this bat. The effects determinations of those projects would have been "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the hoary bat, if it had been a Sensitive species at the time of the project being evaluated.

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

Continued personal use fuel wood harvesting is also likely to result in a continued gradual reduction in snag density throughout the project area. Most of the trees harvested would be dead standing with larger diameter dead standing protected from harvest. Fuel wood gathering in probably a small disturbance, if any to this species and is very localized to existing motorized routes. The effect of wood gathering on stand conditions is likely not a type conversion but could remove some trees used by this species for roosting.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

Effects Determination

The proposed project would result in some loss of roosting habitat, especially in the mechanical treatment areas. However openings created by the proposal would result in an increase in foraging areas. There would be a small disturbance affect to this species dependent upon when fire, mechanical treatments and targeted grazing are applied to the project area. Therefore it is my determination that the proposed action "**may adversely impact individuals but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing, or loss of species viability rangewide**" for the hoary bat.

Lewis's woodpecker *(Melanerpes lewis)*
The Lewis's woodpecker breeds throughout much of the western United States (DeGraaf et al. 1991). It winters in the southern half of its breeding range, which extends as far south as northern Mexico. In Colorado, it is an uncommon to locally common resident in valley, plains, foothills and mesas in the southern half of the state (Andrews and Righter 1992). Its typical elevation limit is up to 8,000 feet but may reach 10,000 feet on rare occasions. It has been observed on all districts of the SJNF (USDA Forest Service 2006). It is especially common between Pagosa Springs and Durango and along the lower Animas, Florida, Piedra, Pine and San Juan rivers. The Durango Bird Club (1992) considers this woodpecker a common year-round resident.

Large ponderosa pine and cottonwoods are the preferred habitat for Lewis's woodpecker. This woodpecker is a primary cavity nester and depends on snags or dead wood within live trees. It inhabits open country with scattered trees rather than dense forests. Home range sizes in Washington and Oregon was reported to be between two and fifteen acres (Thomas et al. 1979).

This is one of the most aerial of woodpeckers in its method of feeding during the nesting season. It launches out in a level, graceful glide to catch flying ants, beetles, flies, mayflies and similar insects before it returns to its perch, much like a flycatcher (Terres 1991). During the non-breeding season, the diet consists of acorns, pinyon nuts, pine seeds, chokecherries, currents, strawberries, juniper berries and other soft mast. The most critical time period on the SJNF is likely to be during winter.

The Lewis's woodpecker requires specific structures and characteristics in its habitat, including relatively high snag densities with well decomposed snags to provide existing cavities or in which to construct new cavities. Their ability to construct cavities may be restricted because of limited nest-site availability among some populations (Abele et al. 2004). They also require low-medium crown closures, well-developed shrub cover to supply insect prey, mast and berries and caching sites.

Broad-scale population declines and reductions in distribution have been attributed to declining availability of suitable trees for nesting and mast storage (Tobalske 1997). Competition for native mast may regulate wintering populations (Abele et al. 2004). Reductions in primary habitat have occurred through the loss of mature stands of ponderosa pine and in declining stands of riparian cottonwood forests. Most of the ponderosa pine forest type on the SJNF is outside its historic range of variation from fire suppression, grazing, logging and snag removal or loss (Romme et al. 1997). The availability of burned forests, which appear to be important habitat for this species, has probably declined as a result of fire suppression. Cottonwood riparian habitats, which serve as both breeding and wintering habitat, have also declined through grazing, clearing for pasture and agriculture, exotic shrub invasion and water diversion (Tobalske 1997, Abele et al. 2004). Lewis's woodpecker is competitive with the European starling for nest sites and high rates of territorial encounters with starlings may reduce reproductive success, even if the woodpecker dominates the interaction (Tobalske 1997).

Direct and Indirect Effects

Project related effects to this species are expected to be generally beneficial. Foraging habitat for Lewis's woodpecker may be improved in the long term. The long term improvement in foraging habitat conditions is likely due to the prescribed fire portion of this proposal reducing the density and continuity of oak in the understory, lifting canopy base heights and thereby creating more open understory conditions that are more accessible to foraging under denser overstory stands. The mechanical treatment units and areas where the effects of fire may get into the canopy and scorch a small number of dominant trees would create openings in this forested landscape that are preferred for foraging by Lewis's woodpecker. Targeted grazing would also reduce understory brush, favoring stand structure preferred by the species.

However it is also the case the project implementation would result in some snags being removed out of safety concerns or as a result of unplanned fire effects. This would possibly reduce the number of potential cavity trees that this species could utilize during the breeding season for nest cavities. Any loss of cavity trees is anticipated to be insignificant and discountable to this species given the amount and distribution of available vegetation suitable to this species in the vicinity of the proposed project area.

Cumulative Effects

A project in 2005 in the HD Mountains treated 934 acres of vegetation, most of which was suitible for this species. The effects determination for that project was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for Lewis's woodpecker.

The Hayden Creek mechanical fuels treatment affected approximate 262 acres of vegetation used by Lewis's woodpeckers. Thinning operations conducted in 2005 moved some currently adequately dense ponderosa pine stands to a desireable character for foraging. The treatment of understory Gambel oak vegetation adjacent to mature and older ponderosa pine reduced stand density and therefore improved foraging opportunities for this species. The effects determination of the Hayden Creek Mechanical Fuels treatement upon Lewis's woodpecker was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" (San Juan National Forest 2004).

Sauls Creek prescribed fire treated about 2,413 acres across 25 burn units, most of which were stocked with ponderosa pine. In 2013 and 2014 Forest Service personnel treated 1,090 and 1,108 acres of that project's treatment units. The Sauls Creek project evaluation determined that there would be a long-term improvement in foraging habitat for Lewis's woodpecker and that habitat conditions and key habitat components would not be significantly negatively affected. Nesting habitat was deemed to be not affected by the proposed action. The effects determination of this prescribed fire proposed action was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for Lewis's woodpecker (San Juan National Forest 2011).

The Sauls Creek mechanical project treated about 2,455 acres of vegetation suitable for this woodpecker. By 2014, 766 acres of this project had be masticated and 344 acres had been thinned. That proposal is maintaining large-diameter snags of sufficient size likely to hold

potential nesting cavities. Most large overstory trees were not affected by project implementation, but disturbance to woodpeckers may have occurred. The effects determination of this mechanical fuels treatment was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for Lewis's woodpecker (San Juan National Forest 2007).

In 2001, a prescribed fire was implemented over an area of 1,514 acres in Sauls Creek. Then in 2003 a mastication project treated 117 acres again in the Sauls Creek area. Both of those projects resulted in a short temporary disturbance effect upon this species and likely reduced the amount of vegetation that could support cavity nesting while increasing the amount of foraging habitat. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for Lewis's woodpecker.

The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands, contributed to a continued slight decline in the amount of Lewis's woodpecker habitat in and around the project area. The Coal Bed Methane project estimated that oil and gas development alone would impact about 0.9% of 28,125 acres total available woodpecker habitat (USDA Forest Service 2006b). The effects determination was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for Lewis's woodpecker.

The Bull and Lange canyons prescribed fire treatments occurred on 2,039 and 1,623 acres respectively. Those treatments reduced understory vegetation, mostly smaller diameter Gambel oak, and probably had the overall effect of promoting foraging habitat and cavity sites. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for Lewis's woodpecker.

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

Personal use fuel wood harvesting is also likely to result in a continued gradual reduction in snag density throughout the project area. Most of the trees harvested would be dead standing with larger diameter dead standing protected from harvest. Fuel wood gathering is probably a small disturbance effect to Lewis's woodpecker if any at all. Disturbance would be very localized to existing motorized routes. The effect of gathering on stand conditions is likely not a type conversion but is a change from vegetation consistent with roosting to more open stands conducive to foraging.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

Effects Determination

Due to the potential for disturbance during active operations of the prescribed fire, targeted grazing and mechanical treatments and small loss of cavity trees, this alternative "**may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"** for Lewis's woodpecker.

Loggerhead shrike *(Lanius ludovicianus)*

Loggerhead shrikes breed locally but are uncommon on the San Juan National Forest. They do occur in southwestern Colorado year round (Durango Bird Club 2003). Breeding habitat is typically open country or pastureland with a scattering of small trees. Shrikes often use large shrubs, often thorny species of bushes, for nesting (Carter 1998, Dechant et al. 2001, Wiggins 2005). Open riparian areas, agricultural areas, grasslands and shrublands, especially semi-desert shrublands are most frequently used by shrikes in western Colorado (Carter 1998). Sagebrush is the habitat most likely used by shrikes for breeding in the project area. Habitat loss is considered to be a major factor limiting shrike populations throughout the U.S. (Carter 1998, Yanishevsky and Petring-Rupp 1998, Wiggins 2005). Shrikes prey mainly on insects and vertebrates such as small birds, reptiles and amphibians (Carter 1998, Dechant et al. 2001, Wiggins 2005). They are noted for their habit of impaling prey on thorns or fence wire for later consumption.

Direct and Indirect Effects

Project related effects to this species are expected to be generally beneficial. The long term improvement in foraging habitat conditions is likely due to the burn and targeted grazing reducing the density and continuity of oak in the understory and lifting canopy base heights, thereby creating more open understory conditions that are more accessible for foraging. The mechanical treatment units and areas where the effects of fire may get into the canopy and scorch a small number of dominant trees would create openings in this forested landscape that serve well for foraging.

However it is also the case the project implementation would result in some snags being removed out of safety concerns or as a result of unplanned fire effects. While the proposal would increase areas that loggerhead shrikes like to forage, it would possibly reduce the number of potential cavity trees that this species could utilize during the breeding season for nest cavities. Any loss of cavity trees is anticipated to be insignificant and discountable to this species given the amount and distribution of available vegetation suitable to this species in the vicinity of the proposed project area.

Cumulative Effects

A project in 2005 in the HD Mountains treated 934 acres of vegetation, some of which was suitible for this species. The effects determination of that project was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for loggerhead shrikes.

Sauls Creek prescribed fire treated about 2,413 acres across 25 burn units, most of which were stocked with ponderosa pine. In 2013 and 2014 Forest Service personnel treated 1,090 and 1,108 acres of that project's treatment units. The wildlife evaluation of the Sauls Creek project determined that there would be a long-term improvement in foraging habitat for shrikes and that habitat conditions and key habitat components would not be significantly negatively affected. Nesting habitat was deemed to be not affected by the proposed action. The effects determination of this prescribed fire proposed action was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for loggerhead shrikes (San Juan National Forest 2011).

The Sauls Creek mechanical project treated about 2,455 acres of vegetation suitable for this species. By 2014, 766 acres of this project had be masticated and 344 acres had been thinned. That proposal is maintaining large-diameter snags of sufficient size likely to hold potential nesting cavities. Most large overstory trees were not affected by project implementation, but disturbance to shrikes have occurred. The effects determination of this mechanical fuels treatment was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for loggerhead shrikes (San Juan National Forest 2007).

In 2001, a prescribed fire in Sauls Creek was implemented over an area of 1,514 acres. Then in 2003 a mastication project treated 117 acres again in the Sauls Creek area. Both of those projects resulted in a short temporary disturbance effect upon this species and likely reduced the amount of vegetation that could support cavity nesting while increasing the amount of foraging habitat. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for loggerhead shrikes.

The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands, contributed to a continued slight decline in the amount of shrike habitat in and around the project area. The Coal Bed Methane project estimated that oil and gas development alone would impact about 1.0% of 5,265 acres total available shrike habitat (USDA Forest Service 2006b). The effects determination was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for loggerhead shrikes.

Raven Ridge mastication project treated approximately 318 acres of pinyon-juniper in 2001. That proposal removed some vegetation that could have been used for roosting and created some large openings in the forested landscape, some of which would be adequate for foraging. The project also resulted in a short term temporary disturbance to shrikes.

The Bull and Lange canyons prescribed fire treatments occurred on 2,039 and 1,623 acres respectively. Those treatments reduced understory vegetation, mostly smaller diameter Gambel oak and probably had the overall effect of promoting foraging habitat but reducing cavity sites for this species. Any shrike habitat that occurred in those project areas would be on the margins of treated units within meadows encompassed by treatment units. If there was any affect to this species' habitat or behavior it probably was insignificant and discountable on account of the poor habitat available for shrikes.

Personal use fuel wood harvesting is also likely to resulted in a continued gradual reduction in snag density near roads open to the public. Most of the trees harvested would be smaller dead trees standing with larger diameter dead standing protected from harvest. Fuel wood gathering is probably a small disturbance to shrikes, if any at all. Disturbance would be localized to existing motorized routes. Some trees that could be used by this species for their cavities may be removed as a result of project activities.

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

Effects Determination

Due to the potential for disturbance during active operations and small loss of cavity trees, this alternative "**may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"** for loggerhead shrikes.

Monarch butterfly *(Danaus plexippus)*

In North America, the monarch ranges from southern Canada through northern South America. The monarch butterfly's most important breeding locations in the west are not well understood but they are believed to occur throughout most of California, western Nevada, Arizona, and isolated regions of Oregon, Washington, Utah, and Idaho. Monarchs in the western North American population, west of the Rocky Mountains, often migrate to sites in southern California and also overwinter in Mexico. The species is entirely dependent on milkweeds within its summer range. Even though the core breeding and overwintering habitats do not occur in R2 (USDA 2015a), the species is wide-ranging and occurs in every state in the Region and

throughout the United States (USDA 2015b). Overall, the abundance of monarch butterflies within R2 is not known.

Egg, larva, pupa and adult are the four stages of this insect's life. Eggs are laid on the underside of a young milkweed plant during the spring and summer months. There are approximately 130 Asclepias species in North America, but the monarch has only been observed feeding on 34 of these species (Luna and Dumroese 2013). Although larvae eat only milkweed, adult monarchs feed on the nectar of many plants such as asters (Aster sp.), thistles (Cirsium sp.), alfalfa (Medicago sativa) and lilac (Syringa vulgaris).

All evidence demonstrates that the monarch in North America has declined significantly in a short period of time and appears to be at high risk. The primary cause of its decline is believed to be from the substantial loss of milkweeds from conversion of lands to agricultural production and the increased use of herbicides (USDA 2015a). Overall reduction of milkweed has occurred across the species range, and this reduction has likely occurred throughout R2. Monarchs are exclusively dependent on milkweeds for breeding and provide the sole food source for young caterpillars (USDA 2015b).

Monarch overwintering habitat is also threatened by development in California and illegal logging in Mexico (USDA 2015a). The number of butterflies east of the continental divide have declined by more than 90 percent and numbers west of the continental divide by more than 50 percent. While there could be local or regional differences in the amount of decline, it is apparent that the overall trend in R2 is downward (USDA 2015b). This species is highly mobile and dependent upon milkweed for reproductive success. It is likely that if any milkweed exists in the proposed project area it would be in a riparian zone and therefore outside of the treatment proposed by this project. However, it is also possible that some milkweed patches could be present in treatment units and subject to human activity.

Direct and Indirect Effects

If this proposal were implemented when this species is present, machinery operation and human presence may temporarily displace individuals. There are large amounts of similar habitat available across the analysis area and adjacent landscape where individuals avoiding the area could temporarily relocate. In comparison to the large amount of suitable habitat available in proximity to treatment units, the area of the proposed project treatment units are substantial but not so large as to forestall this species from finding host plants.

It is unlikely, but possible there could be some milkweed plants in the outer boundary of the proposed project area. If present, milkweed would likely be within no treatment zones as this plant species is wetland dependent. For milkweed to be in a treatment zone and affected by project activities would be highly unlikely but possible. For this reason, although remote, proposed project activities could remove vegetation necessary for this species. Consequently, foraging could become more difficult, monarch butterflies may have to fly further to forage.

Cumulative Effects

The proposed project area is frequently used by the public and as evidenced in the cumulative effects section in the preceding species evaluation, this area receives permitted use for grazing,

timber harvest and outfitter/guide activities. These activities may result in disturbance to this butterfly. However, because butterflies are highly mobile, those activities are anticipated to be inconsequential and insignificant to this species. Similarly, a considerable amount of vegetative manipulation has occurred in the proposed project area. However, most actions are either small in scope, or have increased openings in the forest and consequently vegetation suitable for this species. Consequently, the cumulative effects of all projects that have occurred in the proposed project area are having an insignificant and discountable affect upon this species.

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

Effects Determination

The proposed project would result in some disturbance and loss of habitat. Therefore it is my determination that the proposed action **"may adversely impact individuals but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing, or loss of species viability rangewide"** for the monarch butterfly.

Northern leopard frog (Rana pipiens)

The leopard frog is found throughout northern North America except on the west coast of the continent (Behler and King 1979). The range of this frog includes much of the southern half of Canada and the northern U.S. south to Maryland, West Virginia, Kentucky, northern Illinois, northwestern Missouri, Nebraska, New Mexico, Arizona and eastern California (Hammerson 1999). The northern extent of the range in Canada is poorly known (Smith 2003).

Pond habitats, associated with beaver complexes appear to be the preferred habitat for leopard frogs on the Forest, based on casual observation. Leopard frogs overwinter submerged in lakes, ponds, wetlands and streams (Cunjak 1986, Merrell 1977). Winter sites must not freeze completely, therefore shallow ponds or streams may be unsuitable (Merrell 1977).

Wetland and riparian areas play an essential role throughout the year. Typical breeding ponds have a maximum depth of 59 to 78 inches, contain no predatory fish and dry up every few years. Calling, breeding and egg deposition occur in the warmest portions of a pond, usually in less

than 16 inches of water and on the north sides where there is maximum sun exposure (Gilbert et al. 1994, Merrell 1977).

Once breeding is complete, leopard frogs inhabit grassy meadows within a jump or two of escape into water (Gilbert et al. 1994, Merrell 1977). Adults are highly mobile, moving at night or when vegetation is wet. Roads can be readily crossed, but road kills can be substantial during a mass migration. Although herbaceous cover is critical, there is a negative relation with litter thickness. A thick litter layer may preclude frogs from contact with moist soils and increase the likelihood of desiccation. Vegetative structure rather than composition regulates habitat quality. Grasses six to 12 inches in height are preferred possibly because insect prey are abundant, visible and accessible (Merrell 1977).

In Colorado this species has become scarce in many parts of the state (Hammerson 1999). A number of local populations have gone extinct or have been severely reduced at both low and high elevation sites (Corn and Fogleman 1984, Cousineau and Rogers 1991). This species was identified on all districts of the San Juan National Forest during surveys performed between 1994 and 1998 (San Juan National Forest, 2004a).

The proposed project area has very little, if any, suitable vegetative conditions for this species. Furthermore, the project avoids treatments in riparian areas making it unlikely this species would be affected. However, it is possible that in an especially wet year or due to changes in watercourses as a result of beaver activity or similar circumstances, some areas suitable for this species in the project area may occur but are not mapped. The most likely place would be at the northern edge of the project area where Squaw Creek is nearby.

Direct and Indirect Effects

The use of motorized equipment to access and maintain fire lines, conduct targeted grazing and mechanical treatments and associated human activity poses a small risk to leopard frogs due to trampling. The use of fire on the landscape is unlikely to but could harm some individuals that get into the vegetation being burnt. The affect of fire upon the vegetation immediately adjacent to Squaw Creek would be to reinvigorate riparian vegetation, grasses and forbs in the adjacent uplands. There would be a small temporary loss of habitat for this species post treatment because treatments are expected to occur over several years; even if they were to occur all at once, the unburnt side of Squaw Creek would be suitable habitat for this species.

Cumulative Effects

The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands, resulted in a minimal decline in the amount of northern leopard frog habitat in and around the project area. The Coal Bed Methane project estimated that oil and gas development caused loss of habitat would be small and usually associated with access roads that cross riparian zones. Impacts were considered to be "a few acres across the entire project area for the life of the project" (USDA Forest Service 2006c). The effects determination was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for leopard frogs.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

There are a few inholdings of private land in the proposed treatment area. There is one state of Colorado section that abuts the small tracts of the Southern HDs Ecosystem Restoration project. It is likely that these areas result in some minor loss of habitat and exposure to trampling by stock animals and individuals.

Effects Determination

Leopard frogs may be impacted by prescribed fire, mechanical treatments and activities associated with targeted grazing immediately adjacent to Squaw Creek in the Yellowjacket area of the proposed project. The number of individuals that could be affected is assessed to be small due to the small amount of habitat present and its poor condition. Consequently, the effects determination is "**may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"** for leopard frogs.

Northern goshawk *(Accipiter gentilis)*

The goshawk is Holarctic in distribution. In North America, it occurs from central California, Arizona, northern New Mexico, north and northeast through New Mexico, Colorado and South Dakota, east across the southern Lake States and south into the Appalachian Mountains to North Carolina (Squires and Reynolds 1997).

In Colorado, it is considered a rare to uncommon resident in foothills and mountains (Andrews and Righter 1992). It is observed throughout the SJNF in a variety of cover types. This species is a migrant and is generally absent in the winter months.

Reynolds et al. (1992) called the northern goshawk a forest generalist because it occurs in all major forest types, coniferous, deciduous and mixed. They also noted that because of its relatively large body size and wingspan, the goshawk seldom uses young dense forests. Shuster (unpubl.) also surveyed 28 nesting sites on the SJNF during the 1980s. He found that 22 sites were in aspen stands, generally in trees greater than 14" in diameter. Six of the nests were in ponderosa pine stands, only one of which was in a large yellowbark tree; the others were in

younger and smaller pine trees 14-24" diameter. There appears to be a preference for nesting on gentle north or east facing slopes or benches where the understory is sparse. Nests are usually above 8,250 ft. elevation and nests are seldom farther than 900 feet from water.

The area used by this species after fledging consists of a mosaic of large trees, large snags, middle-aged forests, small openings with a herbaceous understory and large logs (Graham et al. 1994). The size of the post fledging area is 300-600 acres (Graham et al. 1994). The foraging area consists of stands in older age classes that have 40 to 60% canopy cover with well developed herbaceous and shrubby understories. Large tree components, including live trees, snags and logs are scattered throughout the foraging area (Reynolds et al. 1992). The foraging area on average is between 5,000 and 6,000 acres (Reynolds et al. 1992).

Goshawks are predators of forest birds and mammals, such as robins, flickers, squirrels and cottontails. While there are variances between regions on type of prey, there is a common trait: the majority of the important prey species reside mainly on the ground and in the lower portions of the tree canopy (Reynolds et al. 1992).

Direct and Indirect Effects

Modeling of northern goshawk habitat shows 7,286 acres of the proposed project to be habitat for this species. The clearing of understory vegetation by fire would likely improve stand structure for this species because goshawks benefit from wooded stands that they can fly through and ambush small mammals and birds on the ground or in the lower portions of the canopy. Because the prescription is to be a ground fire, with the exception for the potential of fire to periodically spot into the crown of a few dominant trees, it is unlikely that any stands currently suitable for nesting would be altered enough to prevent the stand from remaining suitable for nesting. Some disturbance by personnel implementing the prescribed fire is likely but is not significant because this species has a very large home range and goshawks are probably accustomed to periodic encounters with pedestrians and other motorized uses in this area.

The mechanical treatment units amount to 761 acres within goshawk habitat. The mechanical treatment would provide a more open understory and would create an interspersion of open areas from 0.25 to 1.5 acres in the mechanical treatement areas. The mechanical treatment, targeted grazing and prescribed fire would alter goshawk habitat to favor stands preferred for foraging by this species. Some stands with vegetation sufficiently dense to serve as nesting habitat could be altered such that they would only be used by goshawks for foraging. This stand change is considered insignificant and discountable to this species because of their large home range size and the availability of similar habitat in the prescribed fire portion of the project and outside of the Southern HDs Ecosystem Restoration treatment units.

Human caused activities to implement the prescribed fire, conduct mechanical treatments or the targeted grazing effort could result in small disturbances to northern goshawks. This distubance would most likely be due to the influx of personnel in the project area and in some cases motorized equipment as in the mechanical treatment units.

Cumulative Effects

A project in 2005 in the HD Mountains treated 934 acres of vegetation suitible for this species. The effects determination of that project was “may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide” for the northern goshawk.

The Hayden Creek mechanical fuels treatment affected approximate 262 acres of vegetation some of which was of sufficent structure for northern goshawks. Thinning operations conducted in 2005 may have moved some previously dense ponderosa pine stands to an undesireable character for nesting but improved vegetation structure for goshawk foraging . The effects determination of the Hayden Creek Mechanical Fuels treatement project upon northern goshawks was “may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide” (San Juan National Forest 2004).

Sauls Creek prescribed fire treated about 2,413 acres across 25 burn units, most of which were stocked with ponderosa pine. In 2013 and 2014 Forest Service personnel treated 1,090 and 1,108 acres of that project’s treatment units. The Sauls Creek project evaluation determined that there would be a long-term improvement in foraging habitat for goshawks and that habitat conditions and key habitat components would not be significantly negatively affected. Nesting habitat was deemed to be not affected by the proposed action. The effects determination of this prescribed fire was “may impact individuals” but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide” for the northern goshawk (San Juan National Forest 2011).

The Sauls Creek mechanical project would treat vegetation suitable for goshawks. By 2014, 766 acres of this project had be masticated and 344 acres had been thinned. Most large overstory trees were not affected by project implementation, but disturbance to goshawks may have occurred. The effects determination of this mechanical fuels treatment was “may impact individuals” but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide” for the northern goshawk (San Juan National Forest 2007).

In 2001, a prescribed fire was implemented over an area of 1,514 acres in Sauls Creek. Then in 2003 a mastication project treated 117 acres again in the Sauls Creek area. Both of those projects resulted in a short temporary disturbance effect upon this speices and likely reduced the amount of nesting habitat while increasing the amount of foraging habitat. The effects determination of those projects was “may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide” for the northern goshawk.

The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands, contributed to a continued slight decline in the amount of goshawk habitat in and around the project area. The Coal Bed Methane project estimated that oil and gas development alone would impact about 150 acres of goshawk habitat (USDA Forest Service 2006b). The effects determination was “may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide” for the northern goshawk.

The Bull and Lange canyons prescribed fire treatments occurred on 2,039 and 1,623 acres respectively. Those treatments reduced understory vegetation, mostly smaller diameter Gambel oak, and probably had the overall effect of promoting foraging habitat and reducing the amount of stands adequately stocked to serve as nesting sites. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for the northern goshawk.

Fuel wood gathering is probably a small disturbance effect to goshawks and is localized to existing motorized routes. The effect of gathering on stand conditions is likely too small to change goshawk use of the area.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

Effects Determination

The proposed project would result in some conversion of nesting habitat into foraging habitat. There would be a small disturbance affect to this species dependent upon when fire, mechanical treatments and targeted grazing are applied to the project area. Therefore it is my determination that the proposed action "**may adversely impact individuals but is not likely to result in a loss of viability in the planning area nor cause a trend toward federal listing, or loss of species viability rangewide**" for the northern goshawk.

Olive-sided flycatcher (Contopus borealis)

The primary wintering range of the olive-sided flycatcher, a long-range neotropical migrant, is Panama and the Andes Mountains of north and western South America (Fitzpatrick 1980). This flycatcher breeds only in North America. The western North America breeding range extends south from south-central Alaska eastward through Canada to north-central Manitoba. It extends south in the Rocky Mountains to the higher elevations of northeastern Arizona, northern New Mexico, western Texas and the Sierra Nevada Mountains south to northern Baja California (Altman 1997).

The olive-sided flycatcher is an aerial insectivore that forages from a high prominent perch mostly at the top of a snag or the dead tip or uppermost branch of the tallest trees where it flies out, sallying or hawking, to capture a flying insect. It then returns to the same or another prominent perch.

This species is found in four habitat types; within forest burns where snags and/or tall, residual live trees remain; near water along the wooded shores of streams, lakes, rivers, beaver ponds, bogs and muskegs, often where standing dead trees are present; at forest edges near natural or man-made openings in the forest or in open or semi-open forest stands with a low percentage of canopy cover, rather than in the forest interior or beneath the forest canopy (Altman, 1997). Nests are commonly found in live coniferous tress (Kotlair and Clouse 2000, Roberson and Hutto 2007). They typically use short-needled conifers such as Douglas–fir, hemlock, true firs and spruce (ibid.) Foraging occurs along edges and over forest canopies (Wright 1997). Home range size may exceed 1 kilometer (Wright 1997).

In Colorado, the olive-sided flycatcher is a montane summer resident at elevations of 7,000 to 11,000 ft. (Andrews and Righter 1992). It occurs on all districts of the San Juan and Rio Grande National forests. It is classified as a common nester by the Durango Bird Club (1992).

Direct and Indirect Effects

Project related effects to this species are expected to be generally beneficial. The mechanical treatment units and areas where the effects of fire may get into the canopy and scorch a small number of dominant trees would create openings in this forested landscape, which are preferred for foraging by this flycatcher. Targeted grazing would also open up the understory or help maintain openings, a circumstance that this species prefers. Snags are generally protected in both the mechanical and prescribed fire component of this proposal except where they present a safety hazard, removal of a snag or dominant tree is necessary to break the connectivity of the crowns of trees touching that fire would not carry through the canopy post treatment. It is likely that some snags would also be created by prescribed fire effects.

Any loss of suitable nest trees is anticipated to be insignificant and discountable to this species given the amount and distribution of available vegetation suitable to this species in the vicinity of the proposed project area. However some activities expected to occur in due course of conducting prescribed fire operations, targeted grazing or mechanical treatments could cause a temporary disturbance to this species. It is difficult to gauge the extent of this species response to project related activities. Most likely olive-sided flycatchers would avoid the area during times when activity is intense but return shortly after personnel implementing the project leave. It is possible that avoidance could be more prolonged dependent upon the intensity of activity at a given site, the location of the activity relative to the bird's home range and the proclivity of the individual bird to react to human activity.

Cumulative Effects

A project in 2005 in the HD Mountains treated 934 acres of vegetation, some of which was suitible for this species. The effects determination of that project was "may adversely impact

individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for olive-sided flycatchers.

The Hayden Creek mechanical fuels treatment affected approximate 262 acres of vegetation, some of which may be used by olive-sided flycatchers. Thinning operations conducted in 2005 may have moved some currently adequately dense ponderosa pine stands to a desireable character for foraging. The treatment of understory Gambel oak vegetation adjacent to mature and older ponderosa pine reduced stand density and therefore improve foraging opportunities for this species. The effects determination of the Hayden Creek Mechanical Fuels treatement upon olive-sided flycatchers was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" due to disturbance effects (San Juan National Forest 2004).

Sauls Creek prescribed fire treated about 2,413 acres across 25 burn units, most of which were stocked with ponderosa pine. In 2013 and 2014 Forest Service personnel treated 1,090 and 1,108 acres of that project's treatment units. The Sauls Creek project evaluation determined that there would be a long-term improvement in foraging habitat for olive-sided flycatchers. Nesting habitat was deemed to be not affected by the proposed action. The effects determination of this prescribed fire proposed action was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for olive-sided flycatcher (San Juan National Forest 2011).

The Sauls Creek mechanical project would treat about 2,455 acres of vegetation suitable for this flycatcher. By 2014, 766 acres of this project had been masticated and 344 acres thinned. Most large overstory trees were not affected by project implementation, but a disturbance to this species may have occurred. The effects determination of this mechanical fuels treatment was "may impact individuals" but is not likely to result in a loss of viability on the planning area nor cause a trend to federal listing or a loss of species viability range wide" for olive-sided flycatcher (San Juan National Forest 2007).

In 2001, a prescribed fire was implemented over an area of 1,514 acres in Sauls Creek. In 2003 a mastication project treated 117 acres again in the Sauls Creek area. Both of those projects resulted in a short temporary disturbance effect upon this species and likely improved foraging habitat by creating openings in forested stands. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for olive-sided flycatchers.

The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands, contributed to a slight decline in the amount of flycatcher habitat in and around the project area. The Coal Bed Methane project estimated that oil and gas development alone would impact about 1.4% of 1,102 acres total available flycatcher habitat (USDA Forest Service 2006b). The effects determination was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for olive-sided flycatcher.

The Bull and Lange canyons prescribed fire treatments occurred on 2,039 and 1,623 acres respectively. Those treatments reduced understory vegetation, mostly smaller diameter Gambel oak, and probably had the overall effect of promoting foraging habitat while causing a small potential for disturbance. The effects determination of those projects was "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" for this flycatcher.

Fuel wood gathering is probably a small disturbance effect to olive-sided flycatchers if any at all. Disturbance would be very localized and restricted to existing motorized routes. The effect of gathering on stand conditions is likely a change from vegetation consistent with roosting to more open stands conducive to foraging.

There are three allotments that overlap with the Southern HDs Ecosystem Restoration proposal. The Sauls Creek allotment grazes 198 cow/calf pairs from 16 May through 30 June. The Turkey Creek Allotment is stocked at 127 cow/calf pairs from 1 June to 30 June. The HD allotment is for 271 cow/calf pairs from 21 May to 25 June. In addition to this, the Forest Service grazes its horse and mule stock at Yellowjacket in the pasture that contains a portion of Squaw Creek. The consequence of this grazing is a marginal affect upon maintaining meadows open by grazing tree species that may be encroaching into these open areas.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

Effects Determination

Due to the potential for disturbance during active operations to implement this proposal and the possible small loss of cavity trees, this alternative "**may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"** for olive-sided flycatchers.

Western bumblebee *(Bombus occidentalis)*

The western bumblebee has experienced severe recent declines, approximatley 28% loss of its historic range (Cameron et al. 2011). Western Bumblebee was historically distributed from the west coast of North America from Alaska to central California, east through Alberta and western South Dakota, and south to Arizona and New Mexico (Milliron 1973). Western bumblebees do well in high latitude and high elevation locations (Hatfield et al. 2012).

Population declines for this species are believed to be due an introduced pathogen, Nosema bombi, which was introduced through domestic colonies of bumble bees (Cameron et al. 2011). Other threats include; habitat alteration, insecticide use, invasive plants and insects and climate change (Hatfield et al. 2012). Bumble bees are threatened by many kinds of habitat alterations which could potentially destroy, alter, fragment, degrade or reduce their food supply (flowers

that produce the nectar and pollen they require), nest sites (e.g. abandoned rodent burrows and bird nests) and hibernation sites for over-wintering queens (Hartfield et al. 2015). Major threats that modify landscapes and habitat required by bumble bees include agricultural and urban development. Livestock grazing also may pose a threat to bumble bees, as animals remove flowering food sources, alter the vegetation community and can disturb nest sites (Hartfield et al. 2015).

Western bumble bee has an annual life cycle. Mated queens (colony founders) emerge from wintering sites in the spring and search for potential nest sites (Hartfield et al. 2015). Once a nest site is chosen, the queen then forages for pollen and nectar, returning to the nest site to lay eggs which will eventually produce a brood of workers (Hartfield et al. 2015). Workers emerge and take over nest care, pollen and nectar foraging. The amount of pollen available to foragers directly affects the number of new queens that a bumble bee colony can produce, and since queens are the only type of bumble bees that can form new colonies, pollen availability directly affects the future bumble bee population size (Burns 2004). Early spring and late fall are often periods with lower floral resources; the presence of flowering plants at these critical times is important (Hartfield et al. 2015). In late summer, males and new queens leave the colony, mate, and only the mated queens enter hibernation while all others, including the old queen, die at the onset of colder temperatures.

The habitat for the western bumblebee is described as open grassy areas, urban parks and gardens, chaparral and shrub areas and mountain meadows (Williams et al. 2014). Bumblebees require flowering resources for the entirety of their flight season. Therefore, within our region they are highly dependent on subalpine and montane meadows. In the proposed project area there are meadows with flowering plants. These areas could harbor western bumblebees although no records of this species are on file. It is likely that meadows would be crossed by motorized equipment enroute to harvesting of trees.

Direct and Indirect Effects

Disturbance to bumblebees as a result of human activity to implement the proposal is possible but insignificant and discountable. This because of the small area bumblebees would be nesting and the likelihood of someone stepping on or being so close to a hive as to cause a response by this species is remote. Human activity may cause bumblebees to move away or use alternate meadows. Consequently they may be more prone to predation or have to rely on areas not as rich in flowering plants as the project area. This is likely to be insignificant and discountable because most bee activity would concentrate on mountain meadows, away from where harvesting would occur. Some individual bees foraging in the areas where active tree felling is occurring may avoid the area.

The change in vegetation as a result of mechanical treatments would likely be adverse to this species in the short term but would favor bumblebees in the longer term. Harvesting trees would likely crush some flowering plants that would be used by bumblebees. This would make finding food resources more difficult, bees would have to travel further to find resources for their energy requirements. However, opening the canopy to sunlight would likely result in more flowering plants in the years subsequent to the timber harvest. As this would occur on approximately 35,000 acres, the proposed project may improve the area for bumblebees. Due to the availability

of flowering plants adjacent to timber harvest units both within and adjacent to the proposed project area, this change in vegetation is not considered significant to the western bumblebee.

Cumulative Effects

A project in 2005 in the HD Mountains treated 934 acres of vegetation, some of which was suitible for this species. There was no effects determination because at that time, similar to all the following projects, the western bumblebee was not on the Sensitive Species list. Some portions of the HD Mountain project probably caused a temporary loss of vegetation useful to this species and a small disturbance effect.

The Hayden Creek mechanical fuels treatment affected approximate 262 acres of vegetation, some of which may be used by western bumblebees. Thinning operations conducted in 2005 may have moved some currently adequately dense ponderosa pine stands to a desireable character for foraging. The treatment of understory Gambel oak vegetation adjacent to mature and older ponderosa pine reduced stand density. This project would have resulted in a "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide" due to disturbance effects and a small amount of habitat loss for the bumblebee.

The Sauls Creek prescribed fire treateded about 2,413 acres across 25 burn units, most of which were stocked with ponderosa pine. In 2013 and 2014 Forest Service personnel treated 1,090 and 1,108 acres of that project's treatment units. The Sauls Creek project probably resulted in some increases in nectar sources for western bumblebees.

The Sauls Creek mechanical project treated about 2,455 acres, some of which was suitable for foraging western bumblebees. By 2014, 766 acres of this project had been masticated and 344 acres thinned.

In 2001, a prescribed fire was implemented over an area of 1,514 acres in Sauls Creek. In 2003 a mastication project treated 117 acres again in the Sauls Creek area. Both of those projects resulted in a short temporary disturbance effect upon this species and likely improved foraging habitat by scarifying the ground and thereby promoting flowering plants.

The Northern San Juan Basin Coal Bed Methane project, along with oil and gas development on surrounding non-federal lands, is contributing to a slight decline in the vegetation suitable for western bumblebees in the project area.

The Bull and Lange canyons prescribed fire treatments occurred on 2,039 and 1,623 acres respectively. Those treatments reduced understory vegetation, mostly smaller diameter Gambel oak, and probably had the overall effect of promoting nectar sources for adults of this species.

Fuel wood gathering is probably a small disturbance effect to western bumblebees if any at all. Disturbance would be very localized. The effect of gathering on stand conditions is likely miniscule.

Outfitter, guide and special use of the project area is permitted for 290 days of hunting and packing distributed among three outfitters. A fourth outfitter has a permit to park in the proposed

project area and transit it on their way to guiding and outfitting on the Pagosa District. This both the permitted hunting and packing and the transit poses no loss of habitat to this species and a small amount of activity that could cause a short temporary disturbance effect if any (Tambi Gustafson, personal communication, 2 June 2021).

Effects Determination

Due to the potential for disturbance during active operations to implement this proposal and the possible small loss of vegetation, this alternative "**may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"** for the western bumblebee.